

ENVIRONMENTAL IMPACT ASSESSMENT (EIA) REPORT

PREPARED BY

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LIST OF ACRONYMS

API	American Petroleum Institute
EA	Environmental Approval
EIA	Environmental Impact Assessment
EMP	Environmental Management Plan
EPA	Environmental Protection Agency
EPC	Environmental Protection Council
GoP	Government of Pakistan
HSE	Health Safety & Environment
IEE	Initial Environmental Examination
LAA	Land Acquisition Act
MSW	Municipal Solid Wastes
NOC	No Objection Certificate
O&M	Operation and Maintenance
OGRA	Oil & Gas Regulatory Authority
OHS	Occupational Health and Safety
PEPC	Pakistan Environment Protection Council
PEQS	Punjab Environment Quality Standards
PKR	Pak Rupees
PM	Project Manager
PPC	Pakistan Penal Code
PPE	Personal Protective Equipment
PTCL	Pakistan Telecommunication Limited
TMA	Tehsil Municipal Administration

Executive Summary

EXECUTIVE SUMMARY

This executive summary presents an overview of the main findings of the Environmental Impact Assessment Report for **Installation of Petroleum Storage Depot** by M/S Vanguard Chemicals on Khewat No, 612 Khatooni No. 1082 Qita No. 8 At Lahore Jaranwala Road Near Al Saeed Chowk Mouza Abul Khair Tehsil Ferozewala, District Sheikhupura . The total area of the proposed project is 29097 SFT.

The main goal of the Proposed Project is to provide facility for the storage of petrol and diesel products, from which these products are usually transported to end users or further storage facilities. According to the Environmental Protection Agency, Government of the Punjab, Lahore-“List of Projects”, the project under consideration categories in the category of the projects requiring Environmental Impact Assessment (EIA). Therefore, in 2013 to fulfill the legal requirements of the Section-12 of the Punjab Environment Protection Act-2012, the client has submitted the EIA report in the Environmental Protection Agency, Government of the Punjab, Lahore of subjected project activity for Environmental Approval (EA). Thus the Environmental Approval for the subjected project having an area of 29097 SFT needs to be obtained. The total covered area of the project is 2967 SFT.

INTRODUCTION

The M/S Vanguard Chemicals intends the installation of Proposed Oil Depot for storage and sale of petroleum products at Plot Bearing Khewat No, 612 Khatooni No. 1082 Qita No. 8 At Lahore Jaranwala Road Near Al Saeed Chowk Mouza Abul Khair Tehsil Ferozewala, District Sheikhupura. The total area of the proposed project is 29097 SFT. The land is already owned by the project proponent as it. The proposed unit involves the storage of petroleum products such as (IPA) Isopropyl Alcohol and (NPA) N-Propyl Alcohol. These petroleum products will be stored in Underground tanks. The total storage capacity of proposed tank for (IPA) Isopropyl Alcohol is 48,000 liters. The storage capacity of proposed tank for (NPA) N-propyl Alcohol is 48,000 liters. The number of Fire Blankets present in the proposed project is 5. Two trolleys mounted fire Extinguishers will also be installed in the project. The 8 sand buckets is also present in this proposed project.

I. TITLE AND LOCATION OF THE PROJECT

Installation of Petroleum Storage by M/S Vanguard Chemicals

Location: Plot Khewat No, 612 Khatooni No. 1082 Qita No. 8 At Lahore Jaranwala Road Near Al Saeed Chowk Mouza Abul Khair Tehsil Ferozewala, District Sheikhpura .

II. NAME OF THE PROPONENT

Ahmed Umar Farooq

Owner

Vanguard Chemicals
(Proposed Oil Depot)

Address: House no.836-W DHA Phase III, Cantt Lahore, Dist Lahore.

III. NAME OF THE ORGANIZATION PREPARING REPORT

Safe Enviro Solutions

99/Burj Al-Saeed building Room #110, Main Ferozepur Road, Ichra, Lahore

Phone: +92 336 8779107

Email: safe.envirosolutions@gmail.com

IV. PROJECT IMPACTS AND THEIR MITIGATION

Table given below shows the project impacts; related with construction and operation of the Project. Accordingly, mitigation measures have also been proposed to manage the environment and for sustainable development.

TABLE —E-1: IMPACTS AND THEIR MITIGATION MEASURES DURING CONSTRUCTION PHASE

Impacts	Magnitude	Recommendation Measure	Responsible Authority
CONSTRUCTION PHASE			
Air Pollution Dust Generation, Gases emissions from vehicles	Minor	<ul style="list-style-type: none"> • Sprinkling of water on regular basis especially during dry climatic conditions • Periodic maintenance and management of all the construction machinery and vehicles 	Contractor
Solid waste Construction waste and domestic waste from worker camps	Minor	<ul style="list-style-type: none"> • Conduct separate collection of construction and domestic waste to promote recycling and re-use • Dispose non-recyclable and hazardous waste material properly according to waste management rules 	Contractor
Water Quality - Run-off water from construction area - Wastewater from camp site - Leakage of oil and chemical materials from construction activity	Minor	<ul style="list-style-type: none"> • Use of spill prevention trays and impermeable sheets to avoid contamination of the groundwater/surface water • septic tanks should be constructed with cemented wall to prevent the groundwater contamination 	Contractor
Noise - Noise caused by construction machinery - Vehicles used for mobilization of construction equipment and workers	Minor	<ul style="list-style-type: none"> • Control noise through control of working hours and selection of less noisy equipment. • Proper maintenance of vehicles and construction equipment 	Contractor

TABLE E-2: IMPACTS AND THEIR MITIGATION MEASURES DURING OPERATIONAL PHASE

Possible Impact	Magnitude	Recommendation Measures	Responsible Authority
OPERATION PHASE			
Waste Water	Moderate/Long Term	<ul style="list-style-type: none"> • Treatment of water through septic Tank where oil interceptors are installed prior to septic tank before discharge into the environment • Discharge effluents should meet the effluent standards as per PEQS. 	Proponent
Air and Noise pollution	Minor/Short Term	<ul style="list-style-type: none"> • Proper maintenance of facility equipments • Proper maintenance of transporting vehicles. • Operations should only be carried out only during 0800hrs-1700hrs. 	Proponent
Solid waste generation	Moderate/Long Term	<ul style="list-style-type: none"> • Sale of recyclables and reusable materials to minimize waste for disposal; Establishing a waste generation and collection register for tracking the disposal of waste. • Adequate collection and storage of waste on site and safe transportation to the disposal sites and disposal methods at designated area shall be provided. • Installation of receptacles that enhance segregation of waste at source as provided for Legal Notice 	Proponent
Storage Tank & Pipeline Leakage	Minor / Short Term	<ul style="list-style-type: none"> • Design of pipeline to ANSI Code, which includes the safety and loss prevention features. • Pipeline material to be manufactured to API standard, which specifies yield strength and pressure testing. • Pressure testing of tanks and pipelines will be conducted. 	Proponent

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Possible Impact	Magnitude	Recommendation Measures	Responsible Authority
OPERATION PHASE			
		<ul style="list-style-type: none"> • Welding of Tanks to be performed to API standard with specific inspection procedures. • Spill prevention plan will be implemented in case of any Spillages 	
Occupational accidents and hazards	Minor/Long Term	<ul style="list-style-type: none"> • Necessary health and safety rules shall be enforced by the management to ensure that all staff members adhere to these standards and are thus safe. • Fire Safety shall provide to project to protect flammable products. • Covers for refuse containers and appropriate personal protective equipments to be used by workers shall also be provided by the proponent. • First Aid kits will be provided and staff members trained in first aid administration. • Clear signage will be posted alerting of possible danger situations. 	Proponent

V. PROPOSED MONITORING

The monitoring program is designed to ensure that the requirements of the environmental approval awarded by the EPA are met. Monitoring Program (MP) provides important information that allows for more effective planning and an adaptive response based on the assessment of the effectiveness of mitigation measures. The monitoring of various parameters will help to determine the extent to which project construction/operation activities will cause environmental disturbance.

Table E-3: Environmental Monitoring Plan

Sr. No.	Monitoring Parameters	Monitoring Mechanism	Responsibility
1.	Water Quality	Discrete grab sampling and laboratory testing of water samples.	Proponent
2.	Dust Emissions	Ambient Particulate Matter Monitoring System.	Proponent
3.	Noise Levels	Noise meter	Proponent
4.	Emissions	Emissions monitoring system. Monitoring of ambient air quality.	Proponent
5.	Security	Security arrangements will be made	Proponent
6.	HSE Plan	Health, safety and Environmental will be monitored on daily basis	EHS officer of Project Proponent

VI. ENVIRONMENTAL MANAGEMENT COST

The cost for environmental management and monitoring will be the part of contract of Contractor and Consultants respectively. However, a lump sum amount of Rs. 1 million will be allocated by the project proponent as cost for environmental training and monitoring for a period of two years during construction and operation of the project.

VII. STAKEHOLDER CONSULTATIONS

Public Discussions were held with the inhabitant of the surrounding area. They are quite positive to the project and see the project as growing business and accomplishing towards the positive development in the area at local and in country as whole. The people observe

strong positive impacts regarding employment, business and structural development due to this project. IEE findings depict that people perceive overall positive social and economic impacts by the project. Their attitude towards the project installation is highly optimistic. Majority of the people are convinced for development in the area and they correlate this progress with the pace of their social mobility.

VIII. CONCLUSION AND RECOMMENDATION

The report provides conclusion based on the impacts assessed and mitigation measures suggested. The report recommends that EMP will be made a part of all contract documents. The design of the scheme should meet the Punjab Environmental Quality Standard (PEQS), parameters in all aspects. The contractor will be bound to completely implement relevant mitigation measures set out in the EMP during construction phase while during regular operation of the project. Proponent will be responsible to ensure all the compliance of PEQS. If there are any changes in the design/ layout, or any other changes in project description then changes should be carried out through amendments in environmental assessment report and EMP of the EIA.

Section-01

Introduction of the Project

Section-1
INTRODUCTION

1 INTRODUCTION

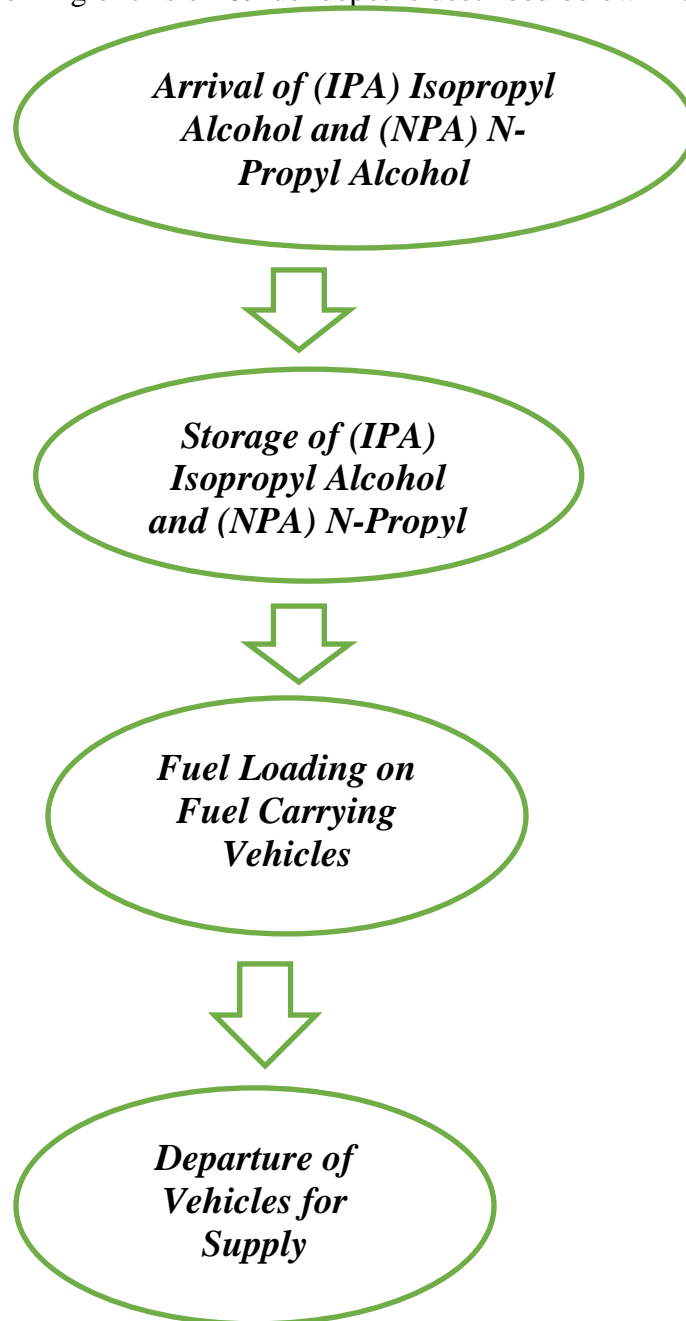
Pakistan is an energy deficient country. To fulfill the demand of energy in industrial and domestic uses other sources of energy are being explored. In this regards, petroleum products are of keen interest. Petroleum Products are stored in bulk in strategic depots scattered over the country. These facilities which are provided for storing large volumes of liquids and gases can be classified as closed-storage vessels or open-storage vessels. Closed-storage vessels include fixed roof tanks, pressure tanks, floating roof tanks and conservation tanks while open-storage vessels include open tanks, reservoirs, pits and ponds.

The main goal of the Proposed Project is to provide facility for the storage of petrol and diesel products, from which these products are usually transported to end users or further storage facilities. According to the Environmental Protection Agency, Government of the Punjab, Lahore-“List of Projects”, the project under consideration categories in the category of the projects requiring Environmental Impact Assessment (EIA). Therefore, in 2013 to fulfill the legal requirements of the Section-12 of the Punjab Environment Protection Act-2012, the client has submitted the EIA report in the Environmental Protection Agency, Government of the Punjab, Lahore of subjected project activity for Environmental Approval (EA). Thus the Environmental Approval for the subjected project having an area of 29097 SFT needs to be obtained. The **M/S Vanguard Chemicals** is the installation of Proposed Oil Depot for storage and sale of petroleum products at Plot Bearing Khewat No, 612 Khatooni No. 1082 Qita No. 8 At Lahore Jaranwala Road Near Al Saeed Chowk Mouza Abul Khair Tehsil Ferozewala, District Sheikhpura . The total cost of the project is estimated 30 million rupees. The total area of the proposed project is 29097 SFT. The land is already owned by the project proponent as it.

The proposed unit involves the storage of petroleum products such as (IPA) Isopropyl Alcohol and (NPA) N-Propyl Alcohol. These petroleum products will be stored in Underground tanks. The storage capacity of proposed tank for (IPA) Isopropyl Alcohol is 48,000 liters. The storage capacity of proposed tank for (NPA) N-propyl Alcohol is 48,000 liters. All tanks installed in the proposed project are fabricated, steel welded according to the requirements of API-650 & hydrostatic test carried. All piping is in accordance with the ANSI B31.3. The depot will be equipped with facilities like firefighting system. The 5 fire hydrants of 700USGPM are present in this proposed project. The number of Fire

Blankets present in the proposed project is 5. Two trolleys mounted fire Extinguishers will also be installed in the project. The 8 sand buckets is also present in this proposed project.

The process of working of this oil & fuel depot is described below in the form of process flow diagram:



The state of the artechnology will be used for storage and sale of products.

1.1 PURPOSE OF THE REPORT

Environmental Impact Assessment (EIA) report is being submitted to the Environmental

Protection Agency (EPA), Government of the Punjab, Lahore in compliance with the legal requirement for Punjab Environment Protection Act-2012 (amended act), and Section-12 for obtaining the Environmental Approval (EA) before commencement of the work or operation of the project activity at the project site. The other relevant regulations and guidelines considered while preparing this EIA report include are given as following:

- Policy and procedures for filing, review and approval of environmental assessments.
- Guidelines for the preparation and review of environmental reports.
- Guidelines for public participation.
- Guidelines for sensitive and critical areas.
- Detailed sectoral guidelines

Different environmental aspects like social, physical, biological and other related features of the project both during construction and its regular occupancy are highlighted in this EIA report. Measures necessary to be adopted to mitigate negative environmental impacts on any part of the environment around are also described. All the important information is also provided as described under present format used to help decision makers, EPA Punjab in the present case, before issuing the desired Environmental Approval (EA).

1.2 IDENTIFICATION OF PROJECT AND PROPONENT

Installation of Petroleum Storage by M/S Vanguard Chemicals

Location: Plot Bearing Khewat No, 612 Khatooni No. 1082 Qita No. 8 At Lahore Jaranwala Road Near Al Saeed Chowk Mouza Abul Khair Tehsil Ferozewala, District Sheikhpura.

In accordance to the Environmental Protection Agency, Government of the Punjab, IEE/EIA Review & Regulations 2022 Subject project falls under Schedule II, category Energy A Clause (5) - "List of Projects Requiring an EIA

NAME OF THE PROPONENT

Ahmed Umar Farooq

Owner

Vanguard Chemicals

(Proposed Oil

Depot)

Address: House no.836-W DHA Phase III,Cantt Lahore,Dist Lahore.

1.3 DETAILS OF CONSULTANTS

Safe Enviro Solutions

Office: 99/Burj Al-Saeed building Room
#110, Main Ferozepur Road, Ichra,
Lahore
Phone: +92 36 8779107;
Email: safe.envirosolutions@gmail.com

1.3.1 PERSONS PERFORMING THE STUDY (Team Members)

The proponent has assigned the task of preparing EIA report to M/S Safe Enviro Solutions, Lahore. The IEE study of the proposed project has been conducted according to Environmental Assessment Procedures, 1997, Review of IEE and EIA Regulation 2022 as prescribed by the Federal Environmental Protection Agency (Pak EPA), Government of Pakistan. The study team of M/S Safe Enviro Solutions which completed the EIA report consists of following experts as mentioned in table 1.1.

Table 1.1: Members Completed EIA Process

Name	Qualification	Position in the EIA/IEE Team
Muhammad Rehman Majeed	M.Phil (Environmental Science) GCU Lahore	Project Incharge And Supervisor
Ammara Anwar	MS/M.Phil Environmental Science PU Lahore	Team Leader and Coordinator (Author of the Report)
Mohsin Ali	M.Phil Environmental Science GCU Lahore	Senior Environmentalist (Field Analyst)
Taznin Husnain	BS (Hons) Environmental Engineering (UET Lahore)	Environmental Engineer
Anum Waheed	BS (Hons) Environmental Science (GCU Lahore)	Research Associate (Author of the Report)

Only the main roles of the team members are given. However, their role was not restricted to these, rather it also

includes many other studies in their respective fields in the context of this IEE studies.

1.4 BRIEF DESCRIPTION OF NATURE, SIZE AND LOCATION OF PROJECT

The proposed project is Installation of Petroleum Storage by M/S Vanguard Chemicals on Plot Bearing Khewat No, 612 Khatooni No. 1082 Qita No. 8 At Lahore Jaranwala Road Near Al Saeed Chowk Mouza Abul Khair Tehsil Ferozewala, District Sheikhpura . The project is commercial in nature. The project in its vicinity has infrastructure like roads, transport, electricity, telephone, land and even the environment is of ideal condition for storage of petroleum products and their sale.

Total area of land is 29097 SFT.

1.5 METHODOLOGY

The methodology adopted to carry out the EIA study of the proposed project was as follow:

- a) Orientation
- b) Planning of Data Collection
- c) Data Collection
- d) Site Reconnaissance
- e) Analysis of Maps and Plats
- f) Literature Review
- g) Desk Top Research
- h) Public Consultations
- i) Field Studies
- j) Laboratory Analysis
- k) Evaluation of Impacts and their analysis
- l) Categorization of impacts based on their potential environmental significance and prescription of preventive / mitigation measures

In addition to the evaluation and review of the available records, data and the facts for the previous project, detailed discussions were held with the concerned members of the project management as well as other project stakeholders.

Notes and proposals for measures to be taken to mitigate and compensate for any determined/detrimental environmental impacts are contained in the Environmental Management Plan (EMP) as well as a Monitoring Plan, including all parameters that need to be measured, and the frequency of monitoring actions.

A comprehensive qualitative and quantitative methodology was adopted to conduct this study inter-alia in due compliance with the EIA requirements. The study included collection of both primary and secondary data regarding environmental status and other relevant factors. This EIA report has been accomplished after carrying out thorough visit to the proposed site and detailed investigation to identify the following Environmental areas of concern:

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- 1) To achieve the desired environmental compliance standards; as per the provisional environmental regulatory requirements; as applicable to the project.
- 2) Plans and activities to prevent/mitigate any potential impacts and the gaps that could probably remain after implementation.
- 3) Any other points/steps to be taken which could be beneficial to mitigate environmental adverse impacts that may accrue both during construction and regular operation of the project.

A view of methodology for environmental assessment is given in following table 1.2:

Table 1.2: Environmental and Social Assessment Process

Phase	Activities	Status	Responsibility
Screening and Scoping	Reconnaissance and initial site visit and consultations, identification of environmental and social issues & applicable safeguard environment policy, categorization and working out an action plan.	Carried out during the present EIA	Project proponent
Impact Assessment	Identification of potential environmental and social impacts through site visits, stakeholders consultations, review of drawings, alternatives etc	during the present EIA	Project proponent
Impact categorization	The significant potential impacts were tabulated and mitigation/preventive measures were prescribed	during the present EIA	Project proponent
EMP Preparation	Stakeholders/Women consultation	Carried out during/prepared as part of the present EIA	Project proponent
	EMP		
	Social Framework Agreement (SFA)		

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Phase	Activities	Status	Responsibility
Disclosure and Consultant SFA Agreement	Disclosure of Draft EMP and SFA	Draft SFA ready	Project proponent
Final EMP	Final version of EMP produced	Included in the present EIA	Project proponent

Section-02

Description of the Project

Section-2

DESCRIPTION OF THE PROJECT

2 DESCRIPTION OF THE PROJECT

This section deals with project components, which are the part of petrol and diesel storage and re-filling unit and its related activity. It also describes the category of the project, availability of construction materials, construction time and cost of the project, construction and operation equipments etc. The information presented in this section is based on project site survey, preliminary design report, and construction drawings provided by the client.

2.1 TYPE AND CATEGORY OF THE PROJECT

The project envisages at establishment of the petroleum products storage and sale facility to full fill the demand and supply gap of the energy as fuel. The project is commercial in nature. **In accordance to the Environmental Protection Agency, Government of the Punjab, IEE/EIA Review & Regulations 2022 Subject project falls under Schedule II, category Energy A Clause (5) - “List of Projects Requiring an EIA”**, Therefore, to fulfill the legal requirements of the Section-12 of the Punjab Environment Protection Act (amended 2012), the client is required to submit the EIA report in the Environmental Protection Agency, Government of the Punjab, Lahore to obtain the required Environmental Approval (EA).

2.2 OBJECTIVES OF PROJECT

Intend of this project is to Provide facility for the storage of oil and petrochemical products and from which these products are usually transported to end users or further storage facilities. The main objective is to fulfill the demand and supply gap of the energy as fuel.

2.3 ALTERNATIVES CONSIDERED, AND REASONS FOR THEIR REJECTION

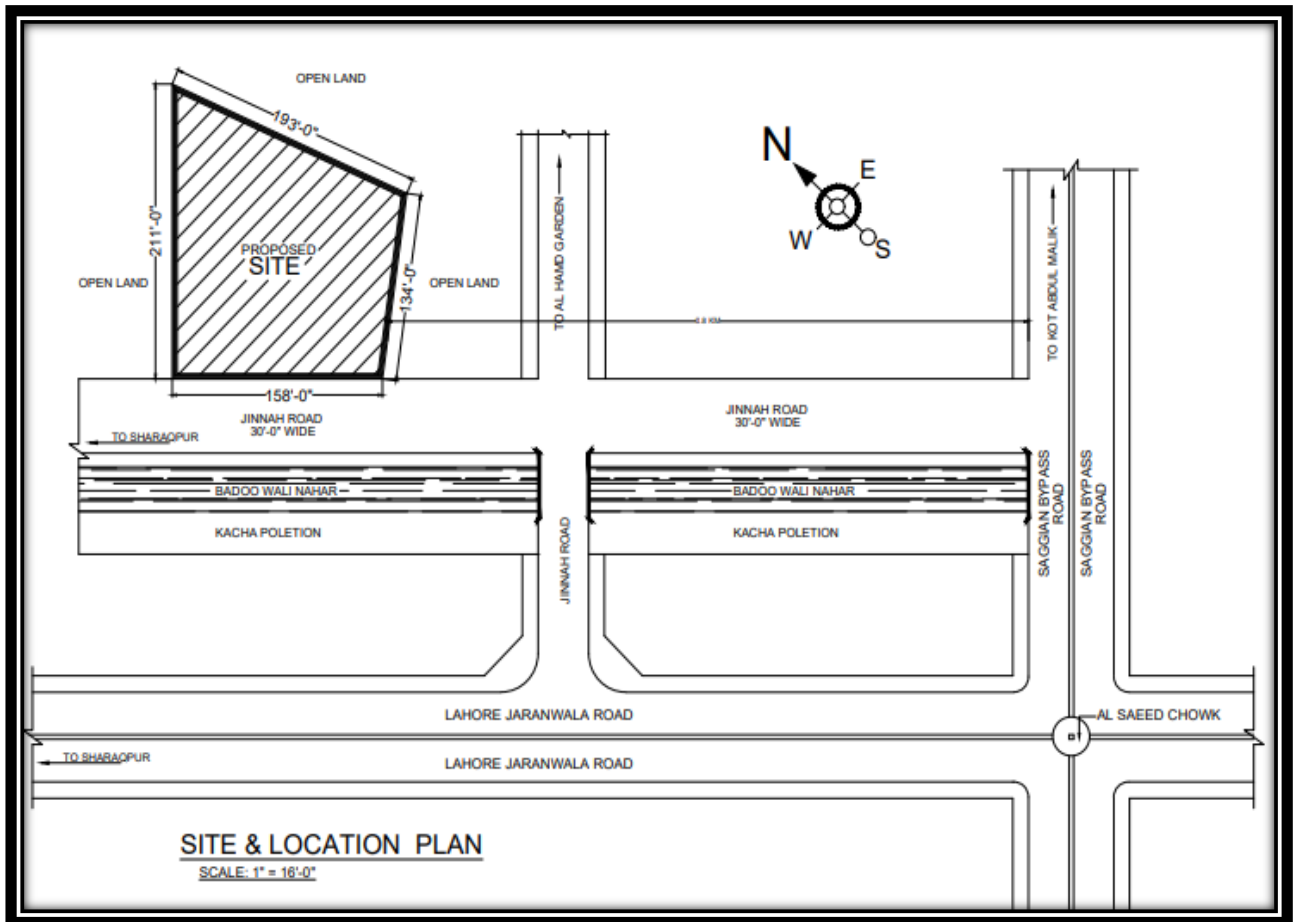
The establishment of Oil Depot is an industrial speculation in the rural area. To fulfill the industrial aspects of the project under reference of this EIA Report, it is to be sited at a place having industrial/commercial processing activity is either already going on or there are bright prospects of the same. Concurrently, it must also meet the legal requirements of the Punjab Environmental Protection Act, 1997(amended 2012). Availability of land at the best convenient place is equally important among other considerations for the site

selection. Availability of access roads, communication facilities, electricity, basic infrastructure, sewerage etc is yet the other necessary requirements. Obviously, environmentally sound, neat and clean environment are the other considerations for site selection. The project will also facilitate the people of the area with increasing the opportunity of employment and others related facilities.

Keeping these requirements and their feasibility and other basic infrastructural requirements are also available at the selected site. Accordingly, the selected site is preferable for establishment of proposed unit.

2.4 LOCATION AND SITE LAYOUT OF THE PROJECT

The proposed project Installation of Proposed Oil Depot by M/S Vanguard Chemicals Khewat No, 612 Khatooni No. 1082 Qita No. 8 At Lahore Jaranwala Road Near Al Saeed Chowk Mouza Abul Khair Tehsil Ferozewala, District Sheikhpura.



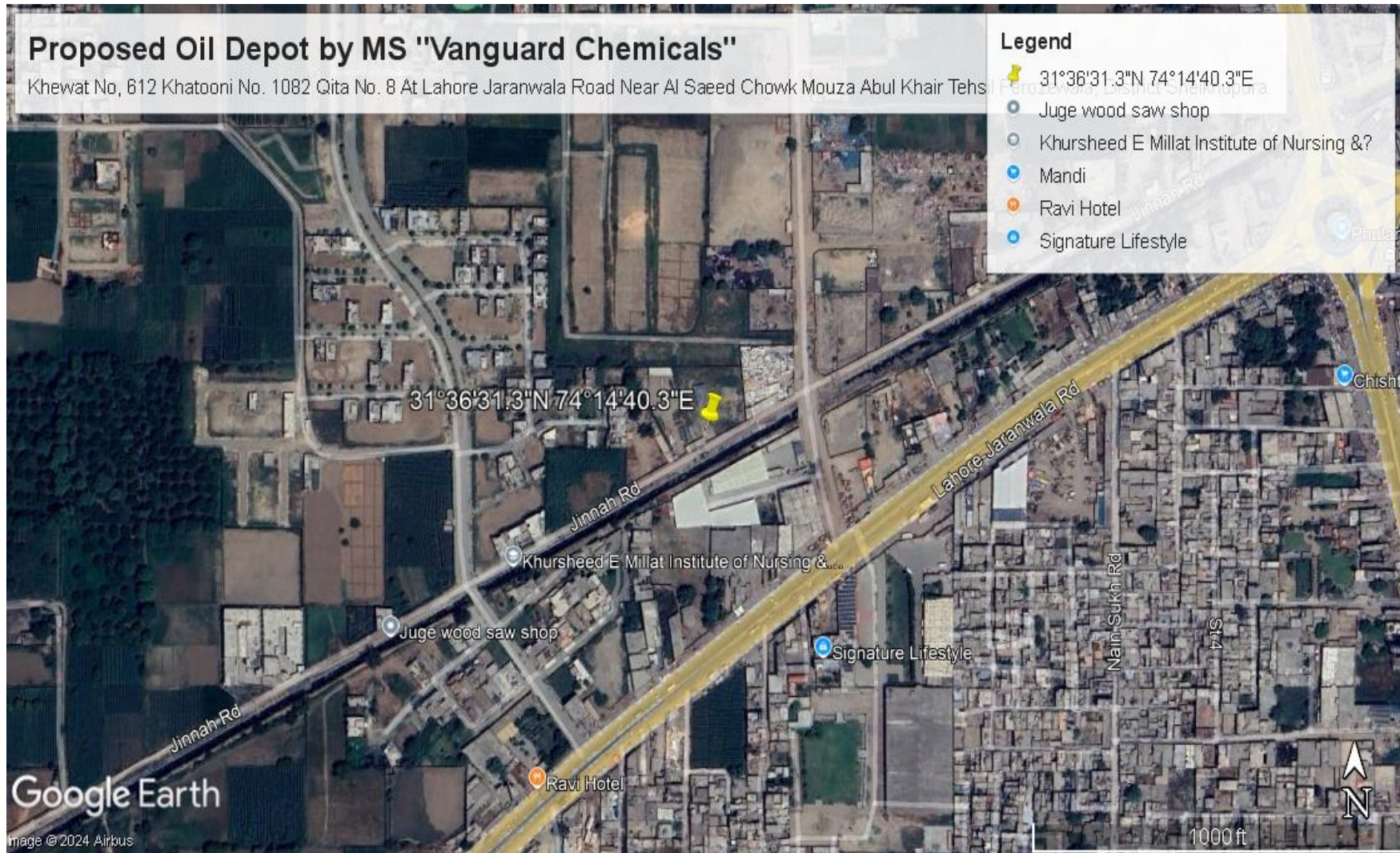


Figure 2.1: Google of Project site

2.5 LAND USE

Currently the proposed land is open land and already owned by the proponent. Total area of land is 29097 SFT.

2.6 VEGETATION AROUND THE SITE

The project site and its vicinity are open & many industrial facilities are operating nearby; however, no species of significant ecological importance exist at or near the project site.

2.7 ACCESS ROAD

The project site is located at a position where vast road network is present. Project site is easily accessible through Lahore Jaranwala Road connected with Jinnah road.

2.8 COST AND MAGNITUDE OF OPERATION

The project cost has been estimated about 50 million rupees. The project is commercial in nature. The quantities have been worked out from the design drawings and project feasibility. The rates for cost estimates are based on construction work, contractor cost, and cost of the raw materials. The activities to be carried out within a period of four to eight months from the starting date.

2.9 SCHEDULE OF IMPLEMENTATION

It is planned that the following schedule of project implementation will be adhered to, this is subject to the conditions that everything goes according to planning and no serious bottlenecks are encountered. The implementation stages of the project activity include:

1st Stage

The stage –1 comprises the onsite contouring studies and soil investigations.

2nd Stage

The stage –2 comprises the following task:

- i-** Laying of foundations excavation and commencement of erection work.
- ii-** Start of civil, electrical and mechanical work.
- iii-** Development of basic infrastructure.
- iv-** Fitting of instrumentation.

3rd Stage

The stage –3 comprises the following task:

- v-** Equipment erection completion.

- vi- Completion of the basic infrastructures water supply system, electricity supply etc.

4th Stage

The last stage will be Commencement of regular operations.

2.10 DESCRIPTION OF THE PROJECT

M/S Vanguard Chemicals is in process to Installation of Proposed Oil Depot on Khewat No, 612 Khatooni No. 1082 Qita No. 8 At Lahore Jaranwala Road Near Al Saeed Chowk Mouza Abul Khair Tehsil Ferozewala, District Sheikhpura.

The petroleum products which will be stored and sold at project site. Tank age Schedule is as follows;

Table 2.1 Tank Schedule

PRODUCT STORAGE TANKS							
TANK NO.	TYPE PRODUCT	PRODUCT	TANK SIZE	CAPACITY IN LITRES	5 % LESS CAPACITY IN LITRES	FLASH POINT	TANK POSITIONING
T-1	DP	(IPA) ISOPROPYL ALCOHOL	DIA 10'-6" X 20'-0"	48,000 LTR.	45,800 LTR.	53 F	UNDER GROUND
T-2	DP	(NPA) N-PROPYL ALCOHOL	DIA 10'-6" X 20'-0"	48,000 LTR.	45,800 LTR.	72 F	UNDER GROUND
PRODUCT STORAGE ROOM							
S. NO.	TYPE PRODUCT	FLASH POINT	PRODUCT	ROOM SIZE	PROPOSED CAPACITY	5 % LESS CAPACITY	
1	DP	53 F	(IPA) ISOPROPYL ALCOHOL	45'-0" x 23'-6"	30046 LTR,	28543 LTR,	
2	DP	72 F	(NPA) N-PROPYL ALCOHOL		30046 LTR,	28543 LTR,	
			TOTAL CAPACITY		60092 LTR,	57087 LTR,	
					13218 GLS	12557 GLS	
M/S VANGUARD CHEMICALS							

<u>AREA OF PREMISES:-</u>
<u>5 KANAL 12 MARLAS</u>
<u>(29097 SQ FEET)</u>

2.11 PROJECT FACILITIES

2.11.1 Facility Layout

A boundary wall of about 10 feet plus 3 feet barbed wire with 9 inches thickness will surround all installations and/or depots to prevent the entry of all unauthorized persons.

Safe distances is maintained which varies from 30 to 420 feet among positioning of storage tanks, product reception and loading facilities in a depot to ensure safety and effective control in case of spillages, accidents and other emergencies.

a) Dyke wall

A Dyke wall is built to regulate the flow of liquid in case of any spillage; it surrounds all tanks and storage area.

2.11.2 Layout of Storage Tanks

Petroleum Storage tanks should be placed such that any hydrocarbon vapor will have diffused into the atmosphere to a concentration well below the lower flammable limit before reaching any area which may be designated as hazardous.

The layout of the tanks should take cognizance of accessibility for fire fighting.

A recommended distance will be kept between the tanks to avoid any hazard.

SCHEDULE OF FIRE FIGHTING REQUIREMENT			
S.NO.	NATURE OF FIRE FIGHTING	SYMBOL	QTY.
1 -	FOAM TYPE TROLLY MOUNTED FIRE EXT. 50 KG	☞☞	2 - NOS.
2 -	FOAM TYPE WALL MOUNTED FIRE EXT. 10 KG	⊕⊕	2 - NOS.
3 -	SAND BUCKETS	⊖⊖⊖⊖	4 - NOS.

2.11.3 Layout of Key Facilities

a) Tank Compound

All storage tanks are inside the dyke area which is inside the boundary wall. The net capacity of a suitable depression should be 110% of the capacity of the largest tank so leakage may be covered. If the leakage or spillage is anticipated in petroleum products storage tanks that could cause damage to third party property, drainage systems, rivers or waterways, slop tanks should be able to minimize the lose.

b) Roadway and Parking Areas

The roadways and packing areas are planned in such a way that the main roads will be suitably surfaced and drained. A road of about 10 ft width is proposed along the boundary wall. A separate parking area is provided for petroleum tankers in order that road-ways and loading areas should not be used for parking. There is a separate car parking outside the dyke wall. Apart from that road near loading or unloading facilities for petroleum should be at a safe distance from boundary. This distance should normally be at least 15m but in small depots, it may be reduced to 10m.

c) Environmental Control

Provision should be made for drainage channels from the tank drain valves. These drainage channels should run to one or more oil interceptor should be cited away from the boundaries and hazardous areas and within easy access for inspection, cleaning and maintenance.

Adequate lighting should be provided for night operations. This should enhance safety of personnel and provide for operations to be carried out in a safe manner for the maintenance of security.

d) Pumps

These are generally grouped together in one area or individual sited to suit operational and constructional convenience. They should preferably be installed above ground level and in the open air outside the tank compound except severe climatic conditions are experienced. Pump for petroleum should be located not less than 15m from the boundary but in the case of small depots, this distance may be reduced to 10m.

Pumps driven by gasoline and diesel engine shall not be operated in a hazardous area. Diesel engines should be installed above ground level to avoid their operation in an accumulation of flammable vapor. There should be a means of rapid shutdown of the unit in event of emergency. All pumps shall be explosion prove.

e) Loading and Unloading Facilities

Over-filling, splash loading and free fall of product shall be avoided during loading operations. The layout of road loading or unloading facilities should incorporate ease of tank vehicle access and exit without the need for reversing. Suitable barriers which may include clamps, locks or other means of control shall be employed to prevent unauthorized train movement, or access by locomotives. Materials used in the construction of the

loading and unloading structures shall be noncombustible. Boundaries should consist of an approved form of secure fence. It could be of chain link fencing, steel paling, brick, and mass concrete post and slab concrete construction.

f) Equipment's and Supplier

State of the art and imported technology will be employed for storage of products.

2.12 CONSTRUCTION ASPECTS

2.12.1 Construction Materials

Comparatively normal quantities of storage structure and other facility construction materials will be required for construction of the proposed facility. The materials mainly required are listed below:

- Coarse and fine aggregate for concrete works
- Sandy gravel for backfilling, embankment raising, etc.
- Cement
- Steel
- Bitumen
- Other materials

2.12.2 Construction Camps

The proponents hired as Project Contractors. The Contractor has constructed a camp with in the project area. Location of the camp has been selected in a way that there should not be any disturbance to the surrounding community etc, and it also is close to the site of work. Camp has been properly fenced and guarded. This camp has been constructed mainly for construction staff and to accommodate Contractor's machinery. The area of the camp has been kept sufficiently large to accommodate parking areas for machinery, construction materials and workshops. For the drinking water and other domestic uses of the camp, ground water is being used.

2.12.3 Work Force and Work Machinery

The details of the construction staff has been shown below in Table 2.2. The labor will work in one shift of nine (9) hours. The construction machinery which will be utilized for construction is shown in Table 2.3 below.

Table 2.2: List of Construction Staff

Sr. No.	Category of Staff	Tentative Number
1	Engineer	2
2	Construction Manager	1
3	Planning Engineer	2
4	Material Engineer	1
5	Site Engineer	1
6	Supervisor	3
7	Foreman	2
8	Skilled Worker	8
9	Semi Skilled Worker	20
10	Machinery Operator	5
11	Admin.	1

Table 2.3: List of Construction Machinery to be used for Construction

Sr. No.	Type of Machinery	Quantity
1	Excavator	1
2	Dumper & Loader	2
3	Tractor & Trolley	3
4	Water Bowser	1
5	Lift/Crane	1
6	Generator	2
7	Concrete Pump	3
8	Vibrator	3
9	Water Pump	3
10	Welding Plant	1
11	Roller	1
12	Concrete Mixing Plant	1

2.13 Restoration/Rehabilitation at the End of Project Life

There will be no any matter of rehabilitation as the proposed site is already owned by the project proponent. There will not be any let regarding safety factors as applicable from time to time for such structures on all accounts. However, at the end of the life of the building, it will be duly dismantled with special precautions to avoid/minimize pollution and at the same time taking all safety precautions to protect human life and property around the project site. Debris or any other wastes resulting from demolishing will be disposed off in environmentally sustainable fashion. The materials capable of recycling/reuse will be either sold in the market or to be reused for other suitable purposes. While dismantling all Government rules and regulations as applicable to such

activities will be strictly adhered to. During entire construction period, necessary precautions will be taken to ensure that no damage is done to the basic infrastructures like sewer system, power transmission lines roads, private or public property and daily human life as well. Safety measures as desired under the code of demolition will be adopted to avoid any harm to humans, property around, or the environment in the project area. Dust to be generated will be minimized by constant sprinkling of water. After completion; all construction matrix, debris and garbage will be removed off immediately from the site within the minimum possible time under safe conditions. Any minor spill over of these materials will be cleared adequately. The land, if and where pitted will be adequately leveled. On the whole, the project site and the area in its near vicinity will be made neat and clean.

2.14 Government Approvals and Leases Required by Project

The environmental approval according to the Section 12 of Punjab Environmental Protection Act-2012 is the mandatory requirement of the project.

Section-03

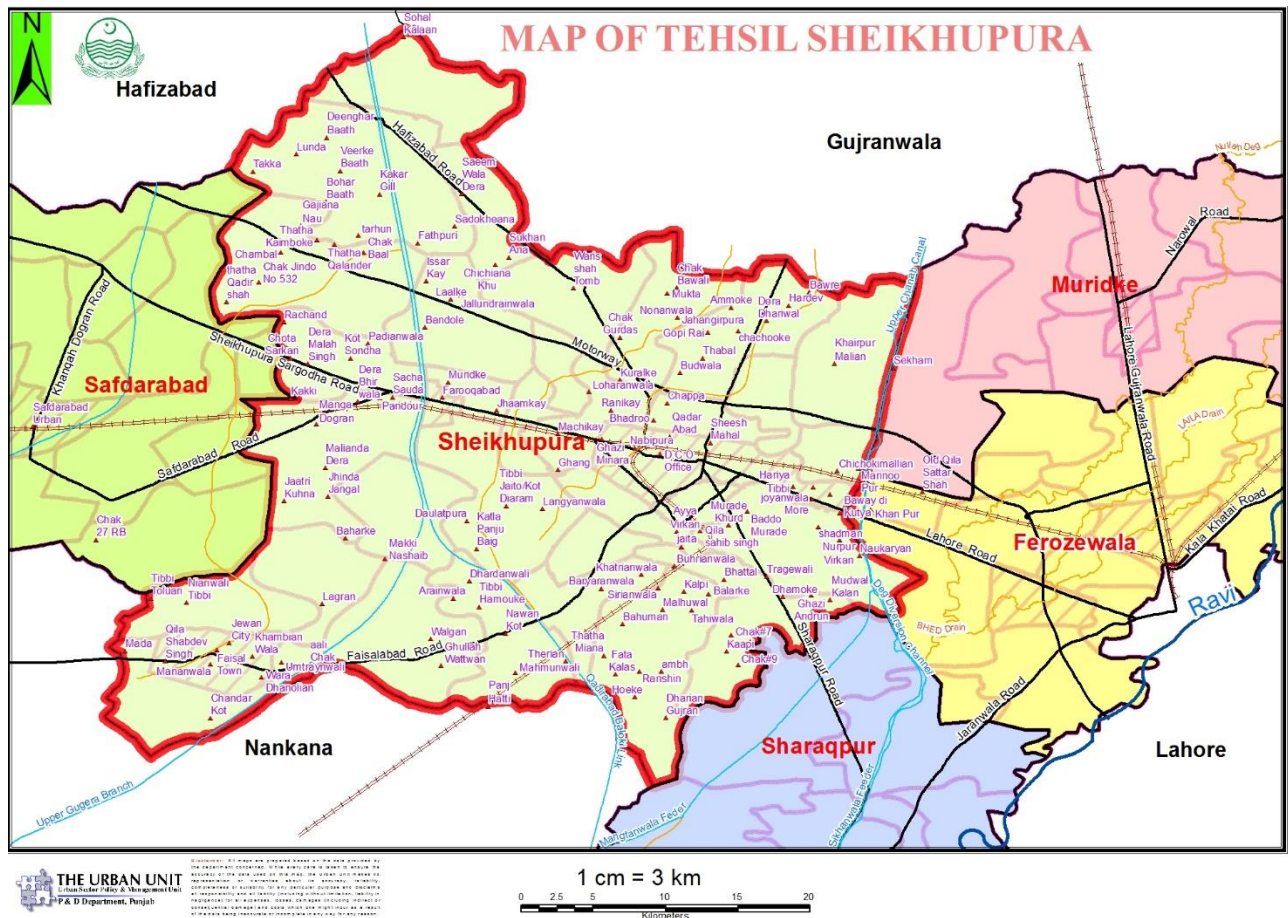
Description of the Environment

Section-3 DESCRIPTION OF ENVIRONMENT

This chapter describes the baseline conditions, which cover the existing physical, ecological, and socio-economic environment of the Study Area. Information on these aspects has been derived from the desk study of available data, field visits to the project area as well as information obtained through visits to the Government departments and other agencies namely Irrigation Department, Meteorological Department, Forest offices and prevailing environmental laws and environmental quality standards etc.

4.3 Physical Environment

4.3.1 Topography of Sheikhpura City is plain. The area is a part of Rechna Doab and consists of Sub-recent sediments brought by spill channel from the Chanab River. There are some old channel levees remnants and old basins filled up with clay materials. The material is probably of Late Pleistocene age derived from mixed calcareous sedimentary and metamorphic rocks of Lower Himalayas. Sheikhpura is bounded by 6 other districts of Pakistani Punjab namely: Lahore, Nankana Sahib, Narowal, Hafizabad, and Gujranwala. Seepage from the canals in the Area has considerably raised the water table resulting in water logging and salinity.

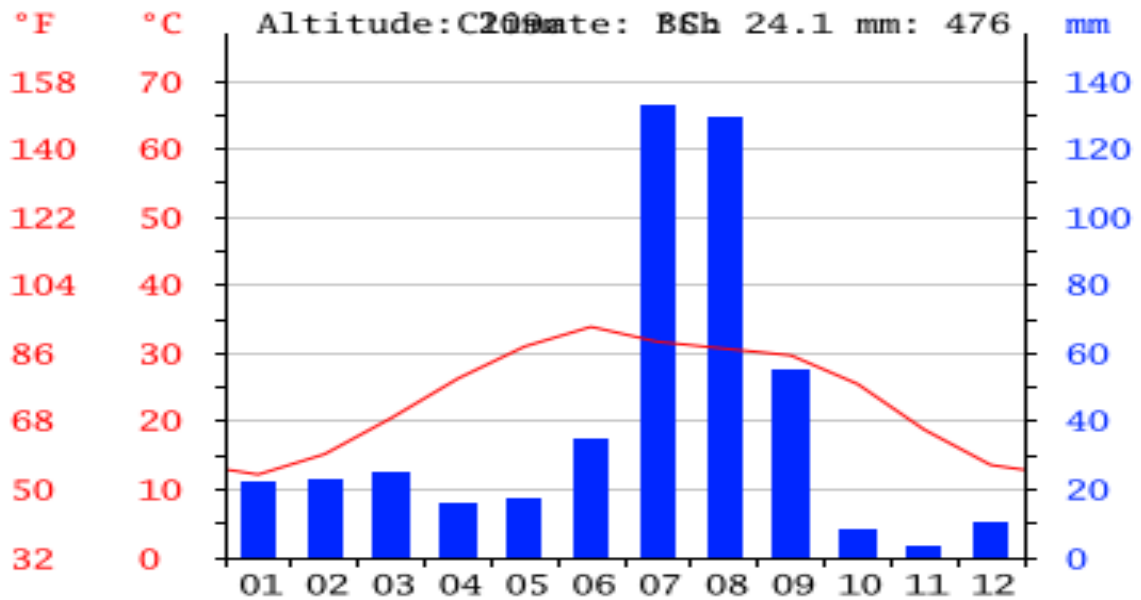


Soils

At all sites of district Sheikhupura the soil is clay loam in texture having pH 8, ECe around 3.5 d Sm⁻¹ and field capacity range from 45-71%. It possesses sufficient organic matter from 8.3 to 9.5 mg/g dry soil. The upland or the Bar in the North West, in the natural condition, is a level prairie thickly dotted over with a stunted under-growth of bush jungle. The Bar Soil is popularly known as Missie. The low land along the river Ravi has light loam. The central portion which is the Deg Valley has stiff soil. Stiff soil is either Rohi or Kallarathi depending on the salt (kallar) contents.

Climate

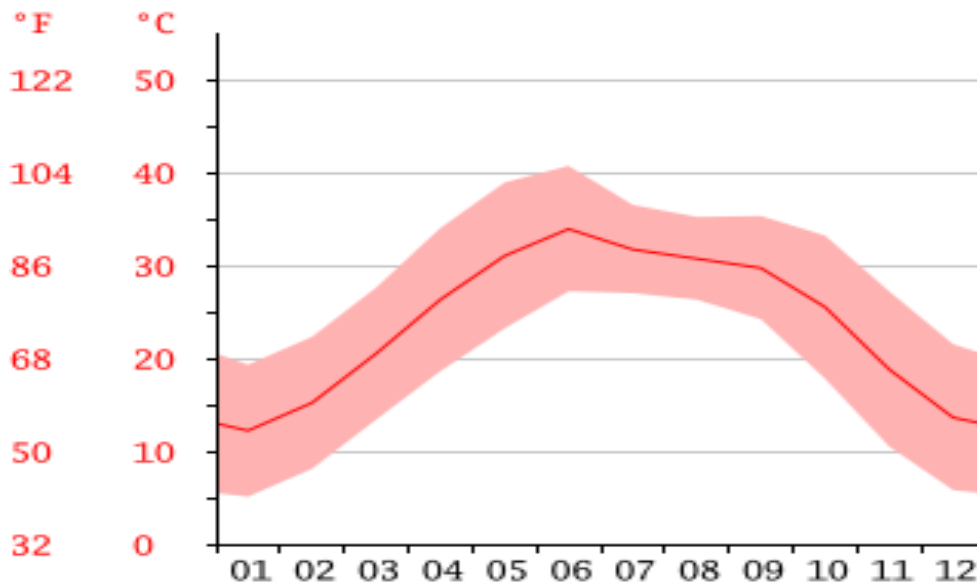
The District has extreme climate; the summer season starts from April and continues till October. During the summer season, temperature ranges from 30 to 45 degrees the winter season starts from November and continues till March. December and January are the coldest months with a mean minimum temperature of 5 degrees. The dust storms occur occasionally during the hot season, during June, July and August. Rainy weather alternates with oppressive weather. The rainfall is 500mm per year. The mean minimum and maximum humidity during winter is 37% and 84%.



A short description is given hereunder to present the climatic conditions of the area:

Temperature

The climate of the district is hot in summer and cold in winter. May and June are the hottest months with maximum temperature ranges from 30 to 45 degrees. December and January are the coldest months with a mean minimum temperature of 5 degrees. The summer season starts towards the end of April and continues till September. The winter begins in November and lasts till February. The spring season exists during March and April and is pleasant.



Temperature Graph of district:

Humidity Monthly relative humidity for this area has been worked out as 55.0%. The maximum recorded humidity for the district is 91.0% while the minimum humidity is 35.0%.

Precipitation

The average annual rainfall is 500 mm/Year. Most of the rain occurs during monsoon in summer which often results in flooding of the nearby water drain and canal.

Ambient Air Quality

In the project area, Particulate Matter (SPM & PM10) and Oxides of Nitrogen (NOx), Sulphur Dioxide (SO2) and Carbon Monoxide (CO) are the major air pollutants. Traffic on road is the main source of air pollutants including NOx, SO2, CO, PM, HCs, smoke, etc.

Ambient Air Gases

As already explained, there are very few industrial units in the Study Area which are far away from this project site. However, traffic activities are continuous source of contamination of ambient air within the project influence zone.

Ambient Noise

Smoke and noise pollution by vehicles is the other main issue, emission of smoke from the foundries is degrading the environment level of the Sheikhpura city.

Water Resources

The water supply in Sheikhpura is collected from ground water through a network of 41 tube wells, which covers 33% of the town and 40% of the population. The distribution system consists of 4 overhead reservoirs with a combined capacity of 290000. No plans are currently being developed to improve public water supply mechanisms.

Ground Water**Sewerage and Drainage:**

The sewerage system covers 20% of the city and serves 30% of the population. Waste water is generally disposed of through open drains to the nearby sewer system, which is noticed to cause environmental contamination and water borne diseases. The residential area is expanding continuously on all sides of the town without any proper planning, which has reduced the coverage of facility. No plans are being developed to address these issues.

Geographic Features:

Sheikhupura is situated at a distance of about 36 Km from Lahore, the provincial headquarters.

Sheikhupura lies 31°42'51.16"N latitude and 73°59'3.49"E longitude. The city is well connected with its surrounding big urban centres like Faisalabad 94 Km, Sargodha 143 Km and Gujranwala 54 Km.

Sheikhupura is also a railway junction. Trains coming from Lahore take these routes for Faisalabad and ShorKot. Sheikhupura City is connected with Faisalabad through newly constructed road Lahore

Faisalabad road project and also connected Faisalabad by M2 and M3 Motorway Hiran Minar, a place of archaeological and historical growth, is situated about 5 kilometres from city

Land Use:

Sheikhupura district borders six other districts in Punjab, including Lahore, Nankana Sahib, Narowal, Hafizabad, and Gujranwala. As such it is very well connected with the urban centres of Lahore (36km), Faisalabad (94 km), Sargodha 143Kmand Gujranwala 54Km. The City also serves as a railway junction, with trains from Lahore passing through Sheikhupura on the way to Faisalabad and Shorkot. Sheikhupura was originally a planned town. Grain and vegetable markets and retail shops were established in the centre, and the „Civil Line“ of public and administrative buildings was placed to the West in the form of a rectangular grid. After 1947, development in the Southern and Eastern parts of the city was haphazard and lacked proper planning. Uncoordinated growth continues to the present day

Ecological Environment

A detail of ecological account of the Project and Study Area is given below:

The principle trees of the District are the Jand (*Prosopis spicigera*), Karril (*Capparis aphylla*), Farash (*Taxarix articulata*), kikar (*Acacia arbica*), Shisham (*Dalbergia sissoo*), Beri (*Zizyphus jujaba*), Malberry or toot (*Morus maraceae*), Bohar (*Fucus indica*), Sirin (*Albizzia lebbek*), Amb (*Mangifera indica*), Nim (*Melia indica*), Piple (*Ficus religiosa*).

a. Trees

A field study related to the identification of tree species in the study area was also conducted. A vast majority of trees were observed in the localities visited as well as open fields. These are Tali/Sheeshum (*Dalbergia sissoo*), Kikar (*Acacia nilotica*), Safeda (*Eucalyptus cinerea*), Neem (*Azadirachta indica*), Beri (*Zizyphus jujaba*), Malberry or toot (*Morus maraceae*), Bohar (*Fucus indica*), Sirin (*Albizzia lebbek*). A tabular comparison is given hereunder to explicit frequency of each species in three zones of study area:

List of Trees Identified in the Project Area

Serial Number	Common Name	Scientific Name
1	Tali/Sheshum	Dalbergia sissoo
2	Kikar	Acacia nilotica
3	Safeda	Eucalyptus cinerea
4	Neem	Azadirachta indica
5	Beri	Zizyphus jujaba
6	Malberry or toot	Morus maraceae
7	Bohar	Fucus indica
8	Sirin	Albizzia lebbek

Vegetables

Vegetables in around and Project Site

The main vegetables grown in the district Sheikhpura is

- Onion
- Potatoes

Vegetables in Study Area

Some important of these Phool Gobhi/cauliflower (*Brassica oleracea* Ver. botrytis), Band Gobhi (*Brassica oleracea* Ver. capitata), Onion (*Allium Cepa*), Potato (*Solanum Tuberosum*) and Turnip (*Brassica rapa* subsp. Rapa).

List of vegetables Identified Around the Project Area

Sr #	Study Area	
	Common Name	Scientific Names
1	Onion	Allium Cepa
2	Potato	Solanum Tuberosum
3	Phool Gobhi	Brassica oleracea Ver. Botrytis

4	Band Gobhi	Brassica oleracea Ver. Capitata
5	Turnip	Brassica rapa subsp. Rapa

Fruits

Oranges, Lemon, Guava, Grape fruit and Mangoes, Mulberry and Jamun orchids are famous.

Sr #	Study Area	
	Common Name	Scientific Name
1	Orange	Citrus Sinensis
2	Lemon	Citrus Lemon
3	Guava	Psidium Guajava
4	Grape Fruit	Citrus * paradise
5	Mangoes	Mangifera Indica
6	Mulberry	Morus alba
7	Jamun	Syzygium cumini

Agriculture

The soil of the area is not suitable for all kinds of vegetation including fodder, orchards, vegetables and other seasonal crops. The main crops in the area is

- Sugarcane
- Wheat
- Cotton
- Gram
- Guar Seed

Farm Traction Power

Tractor is the sole source of farm traction power. No farmer was found using animal traction power. There was significant variation in tractor ownership across farm size groups. However, more than half of the farmers owned tractor while rest were hiring the services for land preparation.

Irrigation

The tube-wells and canal water are the main source of irrigation water for wheat, rice and other

crops and fodder. Also, many farmers irrigate their fields with contaminated water of drain and also many studies have been conducted to assess the level of toxic heavy metals in the soil and vegetables irrigated by drain water and their ultimate impacts on human health. It has been highly recommended during these studies not to use the contaminated water of drains for agricultural practices. On the other hand plenty of ground water is easily accessible for agriculture use.

Crops and Fodder

Crops usually seeded in the area include Wheat, (*Triticum indicum*), Rice, Gram Guar Seed.

Cropping Pattern

Wheat & Rice are the major kharif (summer) and rabi (winter) crops, respectively covering more than 65 percent of the cropped area in both seasons. Two third of the cropped area is under paddy, a cash crop of the area. Also, the rice-wheat is the dominant sequential cropping system, yet fodders and sugarcane are the other important crops of the area in Kharif and Rabi seasons.

Forests

No natural or artificial forest exists in the project influenced area.

Fauna

The area provides healthy environment for the growth and reproduction of a diverse nature of fauna. A short description is given in the following paragraphs.

Mammals

Mammals within project site

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

List of Mammals Present in and Around the Project Area

Project Site		Study Area	
Common Name	Scientific	Common Name	Scientific Name
Cat	<i>Felis catus</i>	Cats	<i>Felis catus</i>
Rat	<i>Rattus rattus</i>	Dogs	<i>Canis familiaris</i>
Squirrel	<i>Sciurus carolinensis</i>	Cows	<i>Heracleum lanatum</i>
Hog Deer	<i>Axis porcinus</i>	Goats	<i>Copra hircus</i>
Boar	<i>Sus scrofa</i>	Horses	<i>Equus caballos</i>

Chinkara	Gazella bennettii	Donkeys	Equus africanus asinus
		Sheep	

Reptiles

Reptiles within Project Site

No reptiles were identified within the project site

Reptiles in Study Area

Above reptiles were also seen in study area in localities and field. The most common reptiles include Snakes, Pakistani Cobra (Naja naja karachiensis), Lizards, Varanis (Goh/large lizard), Spiders and Scorpions, etc.

List of Reptiles Present in and Around the Project Area

Common Name	Scientific Name
Lizards	Lacertilia
Spiders	Araneae
Scorpions	Scorpionoidea
Pakistani cobra	Naja naja karachiensis
Goh/large lizard	Varanis

Amphibians

A number of Amphibians found in the tract include Common Frog (Rana tigrina), Common Toad (Bufo bufo) and Tortoise (Chitra indica).

List of Amphibians Present in and Around the Project Area

Project Site		Study Area	
Common Name	Scientific Name	Common Name	Scientific Name
Common Frog	Rana tigrina	Common Frog	Rana tigrina
Common Toad	Bufo bufo	Common Toad	Bufo bufo
		Tortoise	Chitra indica

Birds

Different types of birds' species were identified within the project site. The bird's species identified in these areas include House Sparrow (*Passer domesticus*), House Crow (*Corvus splendens*), Cheel, Bagle, Bulbul (*Pycnon tus cafer*), Parrots (*Psittacula krameri*), Hawk (*Buteo Jamaicensis*), Kite (*Milvus*), Pigeons (*Columbia livia*), Ullu, etc. are also seen in the area. A large variety of waterfowls and migratory birds also visit the region because of the barrages and wetlands in the area.

List of Birds Present in and Around the Project Area

Sr #	Project Site		Study Area	
	Common Name	Scientific Name	Common Name	Scientific Name
1	House Sparrow	<i>Passer domesticus</i>	Parrots	<i>Psittacula krameri</i>
2	House Crow	<i>Corvus splendens</i>	House Sparrow	<i>Passer domesticus</i>
3	Hawk	<i>Buteo Jamaicensis</i>	House Crow	<i>Corvus splendens</i>
4	Kite	<i>Milvus</i>	Pigeons	<i>Columbia livia</i>
5	Pigeons	<i>Columbia livia</i>		

Wildlife Sanctuaries and Game Reservoirs

No wild life sanctuary or game reservoir is located in the vicinity of the project area or in the project influenced area.

Rare or Endangered Species

There are no rare or endangered species in the study area.

Social Environment

Human settlements are symbol of typical haphazard rural growth based on ill planned developmental procedures showing common indicators of all the unorganized procedure of rural settlement of the province. These localities were developed on need oriented basis. No bye-laws, rules and obligations necessary for human settlement, construction or expansion and infrastructure development were considered. These localities are also the picture of stereotype rural residential areas which lack basic amenities, improper roads, and poor drainage system, deteriorating hygienic and sanitary conditions causing bad effects on human health.

Objectives of the Study

The main objectives of socio- economic study of the project area were:

- To furnish appropriate information about the baseline socio-economic conditions
- To identify and assess significant social impacts of the Project activities on the surrounding area
- To propose suitable means for probable mitigation of the significant adverse social impacts.

An Overview of Socio-economic Conditions

This section describes the status of overall socio-economic baseline conditions prevailing in the study area. Field visits to Sheikhpura suggest that proper HRM practices are not being followed. Most of the finance managers are not technical or trained for managing the financial matters of their respective organizations. Weak link between capacity development and professional growth, poor salary structure and lack of performance management and insufficient human resources are other issues which are affecting the efficiency of the finance and other service delivery departments. It was also identified that the implementation of planning criteria set by the government is weak and the concept of integrated planning approach does not exist. The Finance department the Sheikhpura TMA is of the view that factors such as political priorities and distribution of financial resources are some of the core issues in TMA planning process. The downside of this management is that utilization fluctuates: it was poor in 2006-2007 but improved in 2007-2008 and again decreased in 2008-2009. The utilization in the non-development (Revenue) expenditure has been reasonable except 2007-2008. However on the development side in year 2008-2009 the utilization rate has been extremely slow and the reason may the change of political government in February 2008 where TMA were advised to stop incurring expenditure on the development projects. It currently remains at zero for all public utilities, and has been so since 2008.

Analysis of Socio-economic Conditions

This section presents a locality-wise analysis of existing status of various socioeconomic parameters such as income, employment, basic facilities, education, health, recreation, migration, conflicts, ethnic status, role of women, professions, residential conditions, etc.

A) Sources of Income

Sheikhpura has developed a good industrial base. According to the Census of Manufacturing Industries of 1987-1988, the value-added generated in large-scale industries was higher in Sheikhpura than in

Lahore. The GRP of the City in 1993 was estimated to be Rs. 6,260 million, which constitutes roughly 32% of the district's GRP. The industrial sector contributes 68% of the GRP and 45% of total employment.

B) Basic Facilities

Basic facilities like electricity, roads, transport, gas, water etc. are not available in the area.

C) Educational Facilities

The stats for schools operating in the district of Sheikhpura are as below:

Gender	H.Sec	Secondary	Elementary	Primary
Male	7	78	84	443
Female	11	71	133	325
Total	18	149	217	768

D) Medical Facilities

Like the education sector, the health sector in Sheikhpura also suffers from a number of issues especially affecting the lives and health of children and women. The public health facilities have quite a less coverage in terms of providing the health services to the district's population.

E) Recreational Facilities

Sheikhpura has a number of historical places in the city which attracts visitors to the city:

- Sheikhpura Fort Hiran Minar
- Sheikhpura Fort (Qila Sheikhpura)
- Company Bagh
- Shrine of Shah Jamal
- Muqadssa-e-Mariam
- Sacha Sodha
- Tomb of Mian Sher Muhammad Sharaquri

G) Types of Community

It was observed that being the members of a typical/traditional blend of rural and urban community, almost all the old people are very conservative in their life style. People practice their traditional, social and cultural values strictly in all walks of life.

H) Types of Family

The joint/extended family system is generally prevailing among people of the whole area; however, nuclear family system is also observable in the area.

I) Ethnic Status

An overwhelming majority of the people belongs to Jutt, Mughal, Hans, Arain, Sial, Gujjar, Kamyana etc. tribes living together with peace and harmony. This shows social cohesiveness, solidarity and harmony among them.

J) Status of Women Literacy

A vast majority of the females of the Study Area are literate which shows very good educational trend among females; however, young females have high literacy rate showing positive trend in female education.

K) Decision Making Authority

Majority of the females have no authority in decision-making process regarding their life. This shows non-participation of the females in decision-making process regarding the females and other issues.

2- Quality of Life Values

If we specifically about the project area then majority of the people has to adopt seasonal occupation to supplement their income due to low-income level and inconsistent income opportunities. Majority of the people were working as labors, farmers and many do their own common business (shopkeepers). A fair number of people work as laborers in the city industries. The locals of this are provided with basic facilities like electricity, roads, transport etc. but are disorganized and mismanaged. If we talk about educational facilities then education up to primary level are available in almost all the localities and are easily approachable. The proper health care facilities are not present in the area for both male and female population. Open and level fields of the localities are used as playgrounds by the youth. Urs and Melas are playing a vital role to provide some recreational opportunities to the locals.

It was observed that being the members of a typical/traditional blend of rural and urban community, almost all the old people are very conservative in their life style. People practice their traditional, social and cultural values strictly in all walks of life. The joint/extended family system is generally prevailing among people of the whole area; however, nuclear family system is also observable in the area.

5. Lab Reports of Environmental Analysis

Testing of different parameters has been done by proponents. The copies of lab reports of different environmental parameters are given in annexure.

Section-04

Screening of Potential Environmental Impacts and Mitigation Measures

Section-4

SCREENING OF POTENTIAL ENVIRONMENTAL IMPACTS AND MITIGATION MEASURES

3 ENVIRONMENTAL IMPACTS DUE TO PROJECT & THEIR MITIGATION MEASURES

This section identifies the potential impacts; related with location, design, construction and operation of the Project on the physical, ecological and socio-economic domains of the environment. Accordingly, mitigation measures have also been proposed to manage the environment and for sustainable development. Strict environmental management will be observed during the project construction and regular operation phases. Legal requirements of the PEPA (amended 2012) and the PEQS will be the rating standard for the activities. Compliance with the EMP and EMtP, as per recommendations in this EIA report will be adhered to with full spirit.

The project proponent is filing with the EPA Punjab, written Affidavit and Undertaking on judicial papers, that the project throughout its life will operate under Environmental Management Order. Under these conditions the project at its all stages including from construction to regular operation will go in compliance with the PEQS. The project activities will, therefore, neither adversely affects the population nor the environment around the project site. Evaluation of the anticipated impacts from the project activity and their mitigation measures are described below.

4.1 ENVIRONMENTAL PROBLEMS DUE TO INSTALLATION AT PRESENT LOCATION OF PROJECT

Environmental problems related to location of the project are mostly in the areas of physical setting, socioeconomic setting, ecological setting and special areas. Field survey revealed that the impacts of the project due to its location are mostly insignificant in nature. There is no disturbance in physical and socioeconomic and ecological settings as the land is barren and no specific crops are grown there. The project is located away from residential setting so there will no resettlement and relocation problems.

4.2 PROJECT DESIGN RELATED ENVIRONMENTAL PROBLEMS

The design unit has sought to minimize any environmental potential impacts by ensuring that the project should be in according to the environmental standards. Local aesthetic

value is another issue to be considered during project design. The proposed site is composed of the following major sections:

- The canopy over pumps (fore court)
- Oil storage tanks and breathers
- Offices and shops
- Drive ways: walkways; acceleration and deceleration lanes; and parking areas
- Oil/water interceptor
- Washrooms

Possible Impact	Impacts Magnitude	Proposed Mitigation Measures
Impact on excavated soil	Minor/Reversible	<ul style="list-style-type: none"> • Control construction especially during wet/rainy conditions • Landscaping • Compact loose properly • Dispose excavated loose properly
Compromising Safety and health of workers, neighbors, pedestrians and visitors	Minor/Long Term	<ul style="list-style-type: none"> • Fence off the site • Display warning signs of construction works. • Issue workers with safety appliances • Ensure safe access to the site through culverts. • Provide a first aid kit. • Avail pit latrine and bathing facilities
Traffic and Transport Impacts	Minor/Short Term	<ul style="list-style-type: none"> • Construct acceleration and deceleration lanes. • Deliver materials on need basis. • The personnel on the ground should guide traffic movements. • Damaged drainage should be repaired and maintained after construction.
Increased Human Activities – Increased Solid Waste Generation	Moderate/Long Term	<ul style="list-style-type: none"> • Place litter bins at the site. • Ensure that there are elaborate programmes of waste removal frequently. • Waste generated should be contained appropriate.
Impact on air quality	Moderate/Long Term	<ul style="list-style-type: none"> • Wet or cover dust generating activities.

Possible Impact	Impacts Magnitude	Proposed Mitigation Measures
		<ul style="list-style-type: none"> • Provide PPE to the workers. • Switch off vehicle engine and machinery when not in use

4.3 ENVIRONMENTAL PROBLEMS ASSOCIATED WITH CONSTRUCTION

The construction will also sometimes go round the clock, therefore, during all construction activities the followings will be the major pollutants/wastes or project related pollution aspects:

Possible Impact	Impact Magnitude	Proposed Mitigation Measures
Dust emissions likely to occur during the demolitions, excavation of the top soil and loading and transportation of the construction waste.	Minor/Short Term	<ul style="list-style-type: none"> • Watering all active construction areas when necessary. • Cover all trucks hauling soil, sand and other loose materials or require all trucks to maintain at least two feet of freeboard. Pave, apply water when necessary, or apply (non-toxic) soil stabilizers on all unpaved access roads, parking areas and staging areas at construction sites. • Sweep daily (with water sweepers) all paved access roads, parking areas and staging areas at construction sites. • Fast growing trees will be planted around the project area to act as a wind breaker to reduce the particulate matter. • Provision of PPEs to workers
Hydrology and water quality degradation due to Storm water runoff from the site and excavation.	Minor/Short Term	<ul style="list-style-type: none"> • Installation of septic tank. • The proponent will prepare a hazardous substance control systems and emergency response plans that will include preparations for quick and safe clean up of accidental spills. • Oil absorbent material, taps and storage drums will be used to contain and control any minor releases of engine and other equipment oil.
Oil spills from machines to be used on site and vehicles.	Minor/Short Term	<ul style="list-style-type: none"> • The contractor will control the dangers of oil spills during construction by maintaining the machinery in specific areas designed for this purpose hence will not be a serious impact as a result of the construction.
Noise pollution due to the	Minor/Short	<ul style="list-style-type: none"> • Install portable barriers to shield

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Possible Impact	Impact Magnitude	Proposed Mitigation Measures
moving machines (mixers, tippers, communicating workers) and incoming vehicles	Term	<p>compressors and other small stationary equipment where necessary.</p> <ul style="list-style-type: none"> • Use quiet equipment (i.e. equipment designed with noise control elements). Install sound barriers for pile driving activity. • Limit pickup trucks and other small equipment, observe a common sense approach to vehicle use, and encourage workers to shut off vehicle engines whenever possible.
Workers accidents and hazards during construction.	Minor/Long Term but reversible	<ul style="list-style-type: none"> • Provision of appropriate and adequate Personal Protective Equipment (PPE) to employees. • Enforcement and proper use of PPE by all construction workers. • Provision of appropriate tools, equipment and machinery in sound working conditions to employees. • Proper arrangement of lighting to reduce accidents. • Development of clear policies on treatment of injured personnel.

4.4 ENVIRONMENTAL PROBLEMS RESULTING FROM PROJECT OPERATION

Environmental problems relating to gaseous emissions, PM and noise (from stand by generator) during operation of the project on regular basis will be of minor significance as they will be operate during the power shut down only.

Possible Impact	Impact Magnitude	Proposed Mitigation Measures
Waste Water	Moderate/Long Term	<ul style="list-style-type: none"> • Treatment of water through septic Tank where oil interceptors are installed prior to septic tank before discharge into the environment • Discharge effluents should meet the effluent standards as PEQS.
Air and Noise pollution	Minor/Short Term	<ul style="list-style-type: none"> • Proper maintenance of facility equipments • Proper maintenance of transporting vehicles. • Operations should only be carried out only during 0800hrs-1700hrs.
Solid waste generation	Moderate/Long Term	<ul style="list-style-type: none"> • Sale of recyclables and reusable materials to minimize waste for disposal; Establishing a waste generation and collection register for tracking the

Possible Impact	Impact Magnitude	Proposed Mitigation Measures
		disposal of waste. <ul style="list-style-type: none"> • Adequate collection and storage of waste on site and safe transportation to the disposal sites and disposal methods at designated area shall be provided. • Installation of receptacles that enhance segregation of waste at source as provided for Legal Notice
Storage Tank & Pipeline Leakage	Minor / Short Term	<ul style="list-style-type: none"> • Design of pipeline to ANSI Code, which includes the safety and loss prevention features. • Pipeline material to be manufactured to API standard, which specifies yield strength and pressure testing. • Pressure testing of tanks and pipelines will be conducted. • Welding of Tanks to be performed to API standard with specific inspection procedures.
Occupational accidents and hazards	Minor/Long Term	<ul style="list-style-type: none"> • Necessary health and safety rules shall be enforced by the management to ensure that all staff members adhere to these standards and are thus safe. • Covers for refuse containers and appropriate personal protective equipments to be used by workers shall also be provided by the proponent. • First Aid kits will be provided and staff members trained in first aid administration. • Clear signage will be posted alerting of possible danger situations.

4.5 POSITIVE IMPACTS OF THE PROPOSED PROJECT

4.5.1 Positive Impacts during Construction Phase

4.5.1.1 Employment Opportunities

One of the main positive impacts during projects construction phase will be the availability of employment opportunities especially to casual workers and several other specialized workers. Employment opportunities are of benefit both economically and in a social sense. Apart from casual labor, semi skilled and unskilled labor, formal employees are also expected to obtain gainful employment during the period of construction.

4.5.1.2 Improving growth of the economy

Through the use of locally available materials during the construction phase of the project including cement, concrete, steel, timber, sand, ballast electrical cables etc, the project will contribute towards growth of the economy by contributing to the gross domestic product. The consumption of these materials, fuel oil and others will attract taxes which will be payable to the government hence increasing government revenue while the cost of these raw materials will be payable directly to the producers.

4.5.2 Positive Impacts during Operational Phase

4.5.2.1 Employment opportunities

Employment opportunities are one of the long term impacts of the project that will be realized after construction and during the operation and maintenance whereby skilled staff will be recruited. These will also involve other sources of employment such as direct service provision.

4.5.2.2 Increase in revenue

There will be positive gain for the revenue system arising from the services rendered by the operations. Such an established facility will provide an opportunity for taxation of the recovered oil increasing the country's revenue.

4.6 POTENTIAL ENVIRONMENTAL ENHANCEMENT MEASURES

As described above the worth mentioning wastes will be sewage and solid waste in the plant in the form of waste paper/bottles etc of the project. In order to enhance environment the following measures will be adopted:

(a) Solid waste & effluent management

It is expected there will be a generation of both solid and liquid wastes. Solid wastes are likely to consist of paper, plastic containers and organic waste from foodstuffs eaten by employees. On the other hand liquid wastes shall mainly include waste oils, lubricants, and effluent from the sanitation facilities installed for use by the staff and customers. The proponent will address solid waste in the following ways:

- Rain water disposal will be done through adequate system to be provided at all levels of the project building.

- Sewage will be discharged to the main sewerage system; after its treatment through septic tank and also getting the permission from the competent authority.
- Sale of recyclables and reusable materials to minimize waste for disposal.
- Contracting a licensed waste handler to collect and dispose of the waste.
- Establishing a waste generation and collection register for tracking the disposal of waste.
- All hazardous chemicals will be stored in original containers for ease of identification and handling.
- Information on use and handling of hazardous substances from the manufacturer's hazard data sheets will be obtained and communicated to concerned workers.
- Appropriate PPE will be provided, and usage at all times ensured, to the workers handling hazardous substances.
- An inventory register will be kept and updated as appropriate.

(b) Fire Hazards/ explosions mitigation

The risk of fire and explosions emerged to be of paramount concern to the neighbors of the proposed project. The following measures will be put in place to reduce the likelihood of fires and explosions and to considerably manage such situations in case of occurrence;

- The fuel storage tanks to be installed have undergone thorough calibration, pressure checks, and leakage tests and have been passed as safe for use by an accredited company.
- Installation of the storage tanks will also be done by an accredited company to the standards specified in the Petroleum Act which highlights the methods of storage of petroleum products.
- Fire extinguishers, fire hydrants and fire alarms will be provided at convenient locations within the facility. These will be regularly inspected and maintained by a reputable fire security company.
- Fire drills will be conducted at least biannually to ensure that workers are conversant with the action to take in the event of fire or explosions.
- Fire awareness materials will be placed in strategic locations within the facility to educate the workers and customers on what to do in the event of fire.
- An elaborate emergency response plan will be developed to address the risks associated with the facility's operations.

- Leak detection devices will also be installed at appropriate areas to warn on leakages that are likely to trigger fires. Workers will be trained on handling accidental spillage of flammable substances that may also trigger fires.
- No smoking signs will be displayed as appropriate and measures taken against those not adhering to this order.

(c) Alternative source of Energy

Electricity will be used from WAPDA however the facility should have silenced stand-by generators to be used during power blackouts. These generators should be serviced regularly to avoid air pollution.

(d) Spill Prevention

Creating and implementing a spill prevention control and countermeasure plan is required by the Environmental Protection Agency to prevent the discharge of oil and spills. An SPCC plan identifies proactive measures to prevent a spill from occurring or reaching the environment. In addition to meeting EPA regulations, and SPCC plan help prevent slips, trips and falls from occurring within work environment.

Operating procedures that prevent oil spills

Employees are trained to implement spill prevention practices for work with and around oil sources. This section of plan outlines best practices, recommendations and training procedures such as:

- Storage instructions (i.e., do not store oil sources near catch basins or floor drains)
- Management practices (i.e., have supervision during the loading and unloading of petroleum products)
- Product recommendations (i.e., use pads, drip pans and funnels when transferring petroleum products from a portable container)
- Layout maps (i.e., facility map that denotes location and contents of each container, tank, transfer station and piping)

Control measures to prevent a spill from reaching the environment

This section of the plan identifies the types and locations of spill-containment products in order to quickly control a spill. By maintaining stocked spill kits at spill-prone locations that can increase the likelihood those responders will be able to handle a spill

before it becomes reportable. It also is important to keep a combination of absorbent products stocked and onsite, such as booms, pads and socks. A Spill Kit including absorbent materials is stored nearby to facilitate cleanup response if a spill occurs.

Countermeasures to contain clean up and mitigate the effects of an oil spill that reaches the environment

When a spill is not prevented from reaching the environment, quick-response countermeasures need to be in place. Within this section of the plan, facilities will identify proper evacuation policies, authorized employees for cleanup and contact information.

(e) Health and safety

- PPEs will be provided at all stages of project cycle to all workers and it will be ensured they use them at all time.
- A policy on health and safety at the workplace will be developed.
- All the employees shall be trained on safety and health.
- A health and safety audit will be conducted annually as required by the occupational health and safety department.

Section-05

**Environmental Management and
Monitoring Program**

Section-5

ENVIRONMENTAL MANAGEMENT AND MONITORING PROGRAM

4 ENVIRONMENTAL MANAGEMENT AND MONITORING PROGRAM

This EMP describes the mitigation and management measures to address the environmental issues during construction, its regular operation and decommissioning phases of the proposed project.

4.1 OBJECTIVES OF ENVIRONMENTAL MANAGEMENT PLAN

The objectives of the EMP are as follow:

- To outline functions and responsibilities of responsible persons.
- To state standards and guidelines, which are required to be achieved in term of environmental legislation
- To outline mitigation measures and environmental specifications which are required to be implementation for all phase of the project in order to minimize the extant of environmental impacts and to manage environmental impact associated with the proposed project.
- To prevent long term or permanent environmental degradation
- To identify training requirement at various levels.

4.2 INSTITUTIONAL CAPACITY

Project Proponent will be responsible for Monitoring and Evaluation, but Environment consultant (of the proponent) will responsible to monitor EMP implementation in the field and reporting to the Project Proponent. The Project Proponent will integrate monitoring reports in the main quarterly reports of the project. District Office of the EPA at the project area will monitor the overall activity at the site.

4.3 TRAINING SCHEDULE

In order to effectively operate the EMP all the staff to be engaged in this activity should be trained extensively.

The person to monitor gaseous emissions, PM and noise levels should be extensively trained to handle his job capably. Training program should include use of monitoring

instruments, data generation, processing, interpretation, recording and presentation. Training of the workers should be done on quarterly basis.

4.4 SCOPE OF ENVIRONMENTAL MANAGEMENT PLAN

The EMP provides mitigation and management measures for the following phases of the project:

5.4.1 Construction Phase

This section of EMP provides management principles for the construction phase of the project. Environmental actions, procedures and responsibilities as required within the construction phase are specified. These specifications will form part of the contract documentation and therefore, the contractor will be required to comply with the specifications to the satisfaction of the project Manager and Environmental Control Officer, in terms of the construction contract.

5.4.2 Operation and Mitigation Phase

This section of EMP provides management principles for the operation and maintenance phase of the project. Environmental actions, procedure and responsibilities are required from proponent within the operation and maintenance phase are satisfied.

5.4.3 Decommissioning Phase

This section includes principles for the decommissioning phase of the project. This section of the EMP will be required to be revised and updated at the time of decommissioning.

The EMP is a dynamic document which will be updated as required on a continuous basis. Any amendments made, must be submitted to both the Environmental Officer and Project/Plant Manager for approval prior to implementation.

4.5 MITIGATION PLAN FOR CONSTRUCTION AND OPERATION PHASE

The mitigation measures for plant construction and operation are presented in table 5.1. The measures are organized under the following environmental aspects of the project activities during construction and operation phase.

5.5.1 Organogram for implementation Environmental Management Plan (EMP)

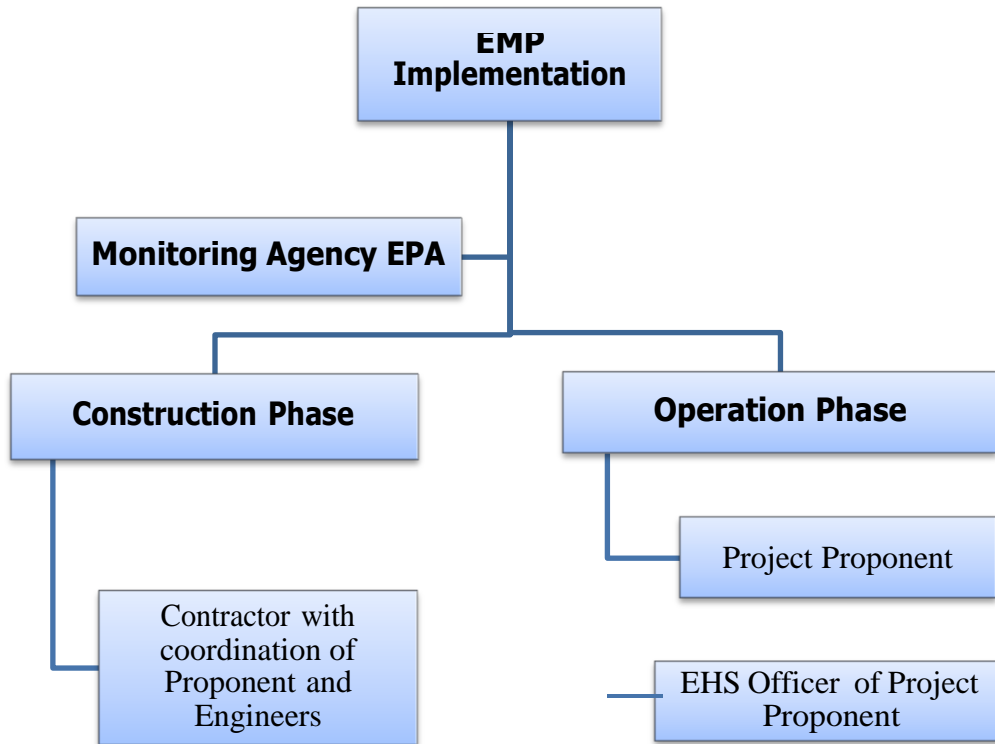


Table 5.1: Environmental Management Plan

Sr. No.	Project Component/ Impact	Targets to be Achieved	Mitigation/ Preventive Action	Responsibility	
				Implementation	Monitoring
Construction Phase					
1.	Air Quality <ul style="list-style-type: none"> • Dust resulting from construction work • Use of heavy machinery can generate exhaust and dust emissions – Smoke from burning of waste materials or burning of firewood in the labor camp 	<ul style="list-style-type: none"> – Compliance with prescribed PEQS to control air pollution 	<ul style="list-style-type: none"> – Necessary measures like sprinkling of water on regular basis especially during dry climatic conditions should be taken to limit pollution from dust and other windblown materials. – Periodic maintenance and management of all the construction machinery and vehicles – Waste burning will not be allowed. 	During Construction Phase by Contractor with coordination of Proponent staff	Site Supervisor
2.	Water Quality <ul style="list-style-type: none"> • Run-off water from construction area – Drainage of wastewater on ground can 	<ul style="list-style-type: none"> – Control of groundwater or surface water pollution from construction activities 	<ul style="list-style-type: none"> – Use of spill prevention trays and impermeable sheets to avoid contamination of the groundwater/surface water – Furthermore, septic tanks will need to be constructed which will be cemented to prevent the groundwater contamination – Proper disposal of waste material on 	During Construction Phase by Contractor with coordination of Proponent staff	Site Supervisor

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Sr. No.	Project Component/ Impact	Targets to be Achieved	Mitigation/ Preventive Action	Responsibility	
				Implementation	Monitoring
	<p>contaminate the soil and groundwater</p> <ul style="list-style-type: none"> - Inappropriate disposal of waste. - Open sewerage water disposal on land can contaminate ground water and cause generation of mosquitoes and various other insects in the area. • Leakage of oil and chemical materials from construction activity 		<p>dumping sites to avoid leachate generation and contamination of groundwater/surface water</p> <ul style="list-style-type: none"> - Prohibit illegal dumping of waste - The contractor will repair / replace / compensate for any damages caused by the Construction activities to the drinking water source/s. 		
3.	<p>Waste</p> <ul style="list-style-type: none"> • Construction waste from construction activities • Domestic 	<ul style="list-style-type: none"> - Proper & safe handling and disposal of construction related waste - Compliance with applicable waste 	<ul style="list-style-type: none"> - Ensure prevention of inappropriate disposal of waste material - Conduct separate collection of construction and domestic waste to promote recycling and re-use - Dispose non-recyclable and 	During Construction Phase by Contractor with coordination of Proponent staff	Site Supervisor

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Sr. No.	Project Component/ Impact	Targets to be Achieved	Mitigation/ Preventive Action	Responsibility	
				Implementation	Monitoring
	waste from workers camp	management rules for hazardous and non-hazardous waste disposal – Implementation of waste management plan	hazardous waste material properly according to waste management rules – Proper disposal of waste on agreed site as per agreed method. The area to be leveled and contoured after disposing excess material. No waste or debris will be thrown in the nearest canal water or other water bodies – Contractor will prepare waste management plan related to construction activities; get its approval from site engineer and ensure its full implementation.		
4.	Noise • Noise caused by construction machinery and vehicles used for mobilization of construction equipment and workers.	– Compliance with prescribed PEQS to control Noise pollution	– The contractor will strictly follow the PEQS for ambient noise – Control noise through control of working hours and selection of less noisy equipment. – Prohibit use of pressure horns – Provision of acoustic enclosures (hood and shrouds) on generator – Proper maintenance of vehicles and construction equipment. – Minimize/avoid unnecessary use of pneumatic drills and other noisy machinery – The personal protective equipment	During Construction Phase by Contractor with coordination of Proponent staff	Site Supervisor

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Sr. No.	Project Component/ Impact	Targets to be Achieved	Mitigation/ Preventive Action	Responsibility	
				Implementation	Monitoring
			(PPE) will be provided to the construction workers and its usage will be made mandatory		
5.	Materials Management	<ul style="list-style-type: none"> - Safe and secure environment for construction workers 	<ul style="list-style-type: none"> - Stockpiles shall not be situated such that they obstruct natural water pathways - Stockpiles shall not exceed 2m in height unless permitted by Concerned Engineer on site - If stockpiles are exposed to windy conditions or heavy rain, they shall be covered either depending on the duration of the project. Stockpiles may further be protected by the construction of low brick walls around their bases - All substances required for vehicle/ machinery maintenance and repair must be stored in sealed containers until they can be disposed of / removed from the site - Hazardous substances / materials are to be transported in sealed containers or bags - Spraying of insecticide shall not take place under windy conditions 	Contractor with coordination of proponent and Engineer	Site Supervisor
6.	Staff Conduct	<ul style="list-style-type: none"> - Timely completion of project activities 	<ul style="list-style-type: none"> - The Contractor must monitor the performance of construction workers to ensure that point relayed during 	Contractor	Site Supervisor

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Sr. No.	Project Component/ Impact	Targets to be Achieved	Mitigation/ Preventive Action	Responsibility	
				Implementation	Monitoring
			their induction have been properly understood and being followed		
7.	Leakages/ spills/ Paints/ Used oil	<ul style="list-style-type: none"> - Compliance with standards set forth by “Guide Lines for Oil Spill Waste Minimization and Management” issued by International Petroleum Industry Environmental Conservation Associate 	<ul style="list-style-type: none"> - Contractor will apply strict rules on his workers and labor to ensure that no spill or leakages are caused - All fuels, oils and bitumen will be stored appropriately, with concrete padding and bunding for containment in case of leakage - Proper maintenance of vehicles and machinery - Chemical waste will be disposed off in approved disposal site. - All fuel tanks, chemicals including oil, paints, pesticides or other hazardous substances will be properly marked to highlight their content - PPE will be enforced to use during the handling and application of chemicals - Used oil/ oil rags will be disposed through approved recyclable waste vendors - The contractor will employ the general criteria for oil and leakage at construction sites, as per standards 	Contractor	Site Supervisor
8.	Workers Health & Safety	<ul style="list-style-type: none"> - Prevention of any possibility of 	<ul style="list-style-type: none"> - Provision of Personal Protective Equipment to the workers 	Contractor	Site Supervisor

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Sr. No.	Project Component/ Impact	Targets to be Achieved	Mitigation/ Preventive Action	Responsibility	
				Implementation	Monitoring
		work site accident /impact on worker's health	<ul style="list-style-type: none"> - Provision of first aid box at work site to cope with emergency situation - Safety training to the workers - Safe driving training to the drivers - Adequate safety signs on site - Provide training regarding proper handling and use of chemicals/ paints - Install fire extinguishers at fire handling places - Inspect and ensure that any lifting devices, such as cranes, are appropriate for expected loads - Any loss of public/ private property will be compensated by the contractor - Regular checks should be carried out to ensure a contractor's is following safe working procedures and practices. 		
9.	Socio-economic Impacts	<ul style="list-style-type: none"> - Prevention of conflicts among locals and make the project socially acceptable - Empowerment of locals to possible extent - Increase in 	<ul style="list-style-type: none"> - Contractor,,s activities and movement of staff to be restricted to designated construction areas - The conduct of the construction staff when dealing with the public or other stakeholders shall be in a manner that is polite and courteous all the time - Lighting on the construction site shall be pointed downwards and away from oncoming traffic. 	Contractor with coordination of proponent staff	Site Supervisor

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Sr. No.	Project Component/ Impact	Targets to be Achieved	Mitigation/ Preventive Action	Responsibility	
				Implementation	Monitoring
		employment and business opportunities for locals.	<ul style="list-style-type: none"> - The site must be kept clean to minimize the visual impact of site - Machinery and vehicles are to be kept in good working order for the duration of the project to minimize noise nuisance to neighbors - Noisy activities must be restricted to the times given in the Project Specification or General Conditions of contract - The Contractor are responsible for ongoing communication with those people that are interested in / affected by the projects - Employ local residents as much as possible - Promote communication between external workers and local people (e.g. join local events). 		
10.	Clearance of site from extra / surplus material and construction equipment	<ul style="list-style-type: none"> - Restoration of site to a similar condition prior to the commencement of the work or to a condition agreed with the project management and 	<ul style="list-style-type: none"> - Timely removal of waste from the site to avoid congestion at work place. - Construction waste should be collected and disposed separately from other waste. - Care will be taken during handling and disposal of waste. - Contaminated soil (if generated) due to accidental spills will be removed 	Contractor	Site Supervisor

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Sr. No.	Project Component/ Impact	Targets to be Achieved	Mitigation/ Preventive Action	Responsibility	
				Implementation	Monitoring
		landscaping of the site	and transported to suitable site for disposal. – Avoid mixing of hazardous waste with non-hazardous waste. – Safe transportation of construction equipment from the site. – The contractor must ensure that all structure, equipment, materials and facilities used or created on site for/or during construction activities are removed. – Empty/available space will be covered with grassy lawns. – Use of native vegetation as a part of landscape. Ornamental plant species like roses, jasmine, and seasonal flowers can be used in proposed landscaping, which is a common practice in this part.		
Operational Phase					
1.	Air Quality – Exhaust gas from stacks – Exhaust gas from vehicles used for mobilization of equipment	– Compliance With Emission gas standards, Ambient air quality (PEQS) standards, Prevention of air pollution in surrounding area;	– Relevant legislative and PEQS design requirements will be adhered to where appropriate. – Access routes will be maintained to minimize traffic dust. – Vehicles and machinery will be regularly maintained and fitted with appropriate exhaust systems and devices.	EHS officer of Project Proponent	Project Manager

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Sr. No.	Project Component/ Impact	Targets to be Achieved	Mitigation/ Preventive Action	Responsibility	
				Implementation	Monitoring
			<ul style="list-style-type: none"> - Maintenance activities requiring purging of gas will be minimized and conducted under favorable meteorological conditions (to facilitate rapid atmospheric dispersion). - Install standard leak detectors for hazardous area installations. - Any detected leaks will be repaired as a high priority. 		
2.	Water Quality <ul style="list-style-type: none"> - Storm water and run-off - from vehicle and plant washing - Rainwater drainage - Leakages of oil and chemical materials 	<ul style="list-style-type: none"> - Compliance with Wastewater standards of PEQS 	<ul style="list-style-type: none"> - Chemical storage areas, vehicle workshop areas and project components will have bunding and/or other containment measures to capture any spills or leaks. - Plant components will be regularly maintained to minimize the risk of leaks developing. - An emergency spill response kit will be housed on site. - Installation of septic tanks with oil separators, so any wastewater produced complies with wastewater standards of PEQS - Storage of oil and chemical material in appropriate tank with retaining wall and method to prevent permeation into ground 	EHS officer of Project Proponent	Project Manager
3.	Waste	<ul style="list-style-type: none"> - Compliance with 	<ul style="list-style-type: none"> - Implementation of waste 	EHS officer of	Project Manager

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Sr. No.	Project Component/ Impact	Targets to be Achieved	Mitigation/ Preventive Action	Responsibility	
				Implementation	Monitoring
	<ul style="list-style-type: none"> - Waste (containers, waste from tanks, soils, metals and other material) - Waste oil from equipment etc. - Sewage and garbage from workers 	<ul style="list-style-type: none"> waste management rules - Management of waste, especially hazardous waste - Prevention of inappropriate waste disposal 	<ul style="list-style-type: none"> management program consisting of reduce, reuse and re-cycling of materials - Systematic collection and protected storage of waste - All bonding material and dunnage from transport vehicles and unloading areas is to be collected and transported off the site to designated disposal areas. - Collect and transport general refuse to local govt. approved disposal sites. - Collect, where practicable taking into account health and hygiene issues, all food wastes for disposal off site. - Where practical, wastes (e.g., scrap metal) will be segregated and reused/recycle - All oils and chemical wastes (bundling as per regulatory guidelines) will be stored and handled in accordance with the PEQS and Fire Safety regulations. - Records of all controlled wastes stored, and removed from site will be maintained. - Safety and response training will be provided for all personnel. - Materials and equipment for 	Project Proponent	

Environmental Impact Assessment (EIA) Report

Sr. No.	Project Component/ Impact	Targets to be Achieved	Mitigation/ Preventive Action	Responsibility	
				Implementation	Monitoring
			responding to hazardous spill incidents will be provided and maintained. Hazardous waste must be treated under related regulations.		
4.	Noise & Vibration – Noise and vibration from generators etc. – Noise from vehicles – Noise from different Equipments	– Compliance with prescribed PEQS to control Noise pollution	– Enhancing the management in and out of the speed limit for vehicles, a ban on vehicle horns, shorten the vehicles entrance residence time as much as possible to reduce automobile noise and exhaust and its impact on the surrounding environment. – Green belts around the project area, peripheral and internal areas. – Growing of tall tree species, green barrier, can have good noise reduction effect. – Installation of low noise/ low vibration type equipment – Proper maintenance of equipments – Adequate enclosure of equipment to reduce noise – Provision of PPEs to workers like ear muffs – Ensure use of PPEs by workers	EHS officer of Project Proponent	Project Manager
5.	Work environment (including work safety)	– Prevention measures against labor accidents and health	Labor accidents – Prepare a manual for labor accident prevention including safety education and training	EHS officer of Project Proponent	Project Manager

Environmental Impact Assessment (EIA) Report

Sr. No.	Project Component/ Impact	Targets to be Achieved	Mitigation/ Preventive Action	Responsibility	
				Implementation	Monitoring
	<ul style="list-style-type: none"> - Labor accidents - Diseases caused by air pollutants, water pollutants, and noise from the operation - Fire Hazards 	problems	<ul style="list-style-type: none"> - Provide workers with appropriate protective equipment - Inspect and ensure that any lifting devices, such as cranes, are appropriate for expected loads - Keep lifting devices well maintained and perform maintenance checks as appropriate - Use equipment that protects against electric shock <p>Environment Pollution</p> <ul style="list-style-type: none"> - Observe related standards and provide workers with appropriate facilities. <p>Fire Hazards</p> <ul style="list-style-type: none"> - Installing fire extinguishers in fire handling places - Installing fire fighting equipments like; <ul style="list-style-type: none"> ▪ Fire Water Monitors ▪ Fire Water Hydrants ▪ Mobile Foam Trolleys ▪ Fire water Hydrants with Pumper Connections ▪ House Cabinet - Developing fire fighting organization and implementing fire drills 		

4.6 ENVIRONMENTAL MONITORING PROGRAM

It will be in the fitness of the things to operate this project under the Environmental Management Plan (EMP). The EMP will ensure that even all type of pollutants from project is within the prescribed limiting values of the PEQS. Thus the environment and human health around the project will be safeguarded.

Regular monitoring of all the significant environmental issues is essential to check the compliance status of EMP.

The main objective of the monitoring will be;

- To verify the results of the environmental study with respects to the proposed project.
- To estimate the trends of concentrated values of the issues, which have been identified as critical and then planning the mitigating measures.
- To assess the efficiency of pollution control mechanism.
- To ensure that any additional parameters, other than those identified in the EIA report, donot turn critical after the commissioning of proposed project.

Table 5.2: Recommended Activities of Environmental Monitoring

Parameter/Receptor	Location	Monitoring Mechanism	Monitoring and Reporting Frequency
Water Quality	<ul style="list-style-type: none"> ▪ Drinking Water ▪ Waste Water 	Discrete grab sampling and laboratory testing of water samples.	<ul style="list-style-type: none"> ▪ Sampling and laboratory testing should be done on monthly basis during the construction and annually during the operational stage. ▪ Discharges from the construction sites should be tested for temperature, pH and turbidity. ▪ Treated effluent discharges from the worker's camp to be tested for pH, TSS and BOD.
Dust Emissions	<ul style="list-style-type: none"> ▪ Tracks along the roads during construction period. 	Ambient Particulate Matter Monitoring.	<ul style="list-style-type: none"> ▪ Sampling and laboratory testing should be done on monthly basis during the construction and annually during the operational stage.
Noise Levels	<ul style="list-style-type: none"> ▪ Camp sites, ▪ Selected locations along the access. 	Noise meter	<ul style="list-style-type: none"> ▪ Monthly during the construction and operational stage.
Stack emission	Silencers of heavy machinery, trucks and other vehicles.	Emissions monitoring system. Monitoring of ambient air quality.	<ul style="list-style-type: none"> ▪ Monthly monitoring of air pollution parameters including PM₁₀, NO_x, SO_x, CO, Hydrocarbons during the construction period, and quarterly monitoring of PM₁₀, NO_x, SO_x, CO, VOCs during the operation stage.

4.7 EQUIPMENT MAINTENANCE DETAILS

The storage facility will have a sizeable inventory of equipment that will be purchased from specialized vendors. Such equipment includes product pumps, a compressor, a stand-by power generator, emergency stop switch etc.

4.8 ENVIRONMENT MANAGEMENT COST

The total cost for the environmental management is estimated as 1.0 million Pak Rupees both during construction and its regular operation. The estimations are as followings;

Table 5.3-Environment Management Cost

Environmental Component	Quantity	Amount PKR
(i) Tree Plantation	1000	350,000
(ii) Health and Safety Measures and Provision of PPEs	L.S.	150,000
(iii) Air and Water Quality & Noise Monitoring	L.S.	250,000
(iv) Environmental Trainings	L.S	250,000
Total Environmental Management and Monitoring Cost		1,000,000

4.9 LANDSCAPING (PLANTING PITS FOR TREES AND SHRUBS)

Excavation for planting shall include plant pits and planting beds. The minimum depths of plant pits or beds shall be measured from finished the grade. Plants beds and pits shall be tested for drainage before planting by filling with water twice in succession. Conditions permitting the retention of water in planting the beds or pits for more than 24 hours shall be brought to the attention of the Architect. If rock, underground construction, obstructions, tree roots or other obstructions are encountered in the excavation of plant pits, alternate locations may be select by the architect. The contractor shall be responsible for all damages resulting from any neglect and failure to comply with this requirement.

Following excavation planting pits, the pits shall be back filled with the sweet soil mixture as specified. Three day prior to planting, the pits shall then be filled with water for consolidation of soil. The dimensions of the panting pits are as follows:

- a) Trees: 3x3x3
- b) Shrubs: 2x2x2
- c) Hedges: trenching 2wide x 2 deep of required length.
- d) Creepers and vines: 2wide x 2 deep of required length.
- e) Edges and flowers beds: fill flower box with sweet soil as per the Architect's drawings. For seasonal flowers, the beds are to have the minimum of 12" sweet soil and 4" manure.
- f) Perforated drain pipe shall be placed as shown on the drawings.
- g) Drain rock shall be placed and compacted in plants as shown on the drawings.
- h) Planting mixture shall be placed as directed by the Architect's representative.

5.9.1 Plant Preparation

The contractor shall be responsible for the preparation of the lawn area and planting lawn. The lawn areas are to be brought up to within 4" of the existing grades with sweet soil in accordance with elevation and contours on the Architect's drawing.

Sweet soil shall be placed in the lawn areas and raked. All stones in excess of 1" in diameter and all rubbish soil shall be removed.

Cover the sweet soil with 4" of well decomposed organic manure and mix into top 4" of the topsoil. Additional sweet soil shall be deposited as may be required to correct all settlement and erosion up to the date of acceptance at the substantial completion Inspection. The prepared surface shall be free from all rivulets, crusting and caking. The sub grade soil shall be sacrificed to a 12" minimum depth and brought to a true and uniform grade before dumping and spreading of sweet soil.

The lawn bed shall be fine graded to remove all ridges and depressions. Surface irregularities resulting from this or other operations shall be leveled to prevent the depressions. Grades shall be adjusted to assure that the grades, after nature settlement and light rolling, will be 1" below adjoining grade of any paved areas.

Rolling shall be done in two directions at right angles to each others. The roller shall be a water blast and roller weighing not more than 200 pounds, not less 150 pounds. Rolling shall be in such a manner so as to eliminate the necessity for walking on the finishing grades.

Should there be a time laps for any reason after final bed preparation, immediately before planting, the ground shall be restored, as necessary, to lose friable condition. Extreme care shall be taken during planting to ensure that no change shall occur in the finish grade.

5.9.2 Irrigation and Under-Drainage

Irrigation system and under-drainage must be installed prior to lawn planting.

5.9.3 Lawn Planting

No lawn shad be planted when temperatures are above 90° F or if the ground is in a muddy condition/ or other conditions that are unsuitable in area.

The sweet soil surface shall be moistened with a fine spray immediately before planting.

The lawn shall be planted according to acceptable standards practice in order to ensure a completely healthy grass cover. The planting procedures shall be approved by Architect’s representative at site.

5.9.4 General Landscape Protection

Planting areas and plants shall be protected all times against trespassing and damage of all kinds for the duration of maintenance period. If any plants become damage or injured, they shall be treated or replaced at the discretion of the architect.

Protection shall also include all temporary protections fences and barriers, all signs and all other work incidental to proper maintenance.

5.9.5 Clean Up

After completion of all work, all debris, rubbish and surplus materials shall be removed from the site and Contractor expense. The site shall be left clean, represent able and to satisfaction of the Architect.

5.9.6 Substantial Completion Inspection

The Architect shall inspect all work for Substantial Completion upon written request of the contractor. The request shall be received at least 10 calendar days before the anticipated date of inspection. Upon completion and re-inspection of all repairs or renewals necessary, in judgment of the Architect, the Architect shall certify in written to employer and the contractor as to the substantial Completion of the work. The Employer’s maintenance shall begin from the time of acceptance of work of Substantial Completion.

5.9.7 Coordination

The Contractor shall be responsible to coordinate all construction and planting schedules and to advise in writing to the Architect.

Section-06

Mitigation and Impact Assessment

Section-6

MITIGATION AND IMPACT ASSESSMENT

5 MITIGATION AND IMPACT ASSESSMENT

5.1 PROBLEM AND ITS OCCURRENCE

On the basis of the findings of the EIA, it is concluded that the project will not pose any adverse impact on the local population and the environment. A proper management plan shall be prepared in case of any accident like;

- Leakages from tanks may occur, if the liquid leaks it will quickly evaporate and form a relatively large cloud of gas which will drop to the ground, as it is heavier than air.
- Tanks can explode if involved in a fire.
- Any health hazard to workers/other persons during construction or operation phase.

5.2 WAYS OF ACHIEVING MITIGATION MEASURES

6.2.1 Changing in Planning and Design

- (a) Storage plant will be designed to appropriate standards and be properly installed and commissioned by competent persons.
- (b) The installation/construction of piping, instruments and the plant will be carried out by an accredited Company.
- (c) The materials used for the construction of the filling shed must be non- inflammable material.
- (d) The filling shed must be open-sided for good ventilation.
- (e) Plant must be fitted with adequate safety and monitoring control devices and operated by skilled persons.
- (f) Any amendments made, must be submitted to concerned authorities for approval prior to implementation.

6.2.2 Improved Monitoring and Management Practices

There shall be a suitable program of monitoring and maintenance. There will be proper firefighting and health and safety plan. Any improvement in monitoring and management practices shall be addressed to concerned authorities.

6.2.3 Compensation in Money Terms

There is no monetary compensation involved in the project or during the process of land acquisition as the land is already owned by the Project Proponent.

6.2.4 Replacement, Relocation and Rehabilitation

There will be no any matter of replacement, relocation and rehabilitation as the proposed site is already owned by the project proponent. There will not be any let regarding safety factors as applicable from time to time for such buildings on all accounts.

Section-07

Stakeholders Consultation

Section-7

STAKEHOLDER CONSULTATION

This section describes the regulatory policy, planning and current practices of project proponent pertaining to the stakeholder engagements and outcomes of stakeholder consultation process initially done as part of the IEE/EIA report. The feedback from communities and other stakeholders directly or indirectly affected by the project is collected so that it may be used to adjust and improve the project's design, planning, implementation and help the implementation structure ensuring that the project is both environmentally and socially sound. The consultation process was carried out in accordance with the requirements of the Punjab Environmental Protection Act and Government of Pakistan on public consultation.

The objectives of this process were;

- To disseminate information on the project and its expected impact, long-term as well as short-term, among primary and secondary stakeholders,
- To gather information on relevant issues so that the feedback received could be used to address these issues at an early stage of the project,
- To determine the extent of the negative impacts of different project activities and suggest appropriate mitigation measures.

7.2 IDENTIFICATION OF STAKEHOLDERS

There are two types of stakeholders, i.e.

- a. Primary stakeholders
- b. Secondary stakeholders

7.2.1 Primary Stakeholders

The primary stakeholders are the initial stakeholders, such as affected persons, general public and women residing in the project area. Accordingly, the consultations / focus group discussions were made with all primary stakeholders for sharing of information about the proposed project and expected impacts and understanding about the concerns by category of stakeholders.

7.2.2 Secondary Stakeholders

The secondary stakeholders are the representatives of Government Departments/Agencies involved in the planning, design, implementation and operation of the project, including various government departments such as District Administration, EPA, WAPDA, Forest, and other relevant departments.

7.3 STAKEHOLDER ENGAGEMENTS PLANNING

A two fold stakeholder engagement is planned and carried out for the proposed project as following:

(a) Stakeholder Consultation during the Preparation of EIA Report:

The consultation with the primary and secondary stakeholders has been conducted initially during the preparation of the IEE/EIA report, details of which have been given in the subsequent paragraph at 10.4.

2.2. STAKEHOLDER CONSULTATION PROCESS

The overall strategy for stakeholder's consultation is as follows:

a. Table - 9.1: Process of Stakeholder Consultation

Stakeholders	Purpose of Consultations	Methodology	Stage
Primary Stakeholder	<ul style="list-style-type: none">• Information gathering and data collection.• Information sharing about the project (disclosure)• Opinion seeking (concerns and expectations)• Grievance redress	<ul style="list-style-type: none">• Focus Group Discussions• Household surveys• Formal and informal Community meetings	<ul style="list-style-type: none">• Base line Study Impact Assessment
Secondary Stakeholder	<ul style="list-style-type: none">• Participation in the development process• Information gathering• Authentication and validation of the development processes• Verification of the record	<ul style="list-style-type: none">• One on one meetings• In-depth interviews	<ul style="list-style-type: none">• During the EIA preparation• On need basis during the project implementation and

Stakeholder consultation for this project was planned during the preparation of EIA report.

In first step during the scoping, which has already taken place, consisted of meetings with individuals, groups, relevant organizations and government departments, which are in some way linked to the project and therefore considered stakeholders. The meetings were conducted to inform stakeholders about the project and how it may affect their lives/activities, and to record their concerns, whether real or perceived. Through the use of various tools the study team tried to involve the stakeholders in active decision-making. The results of this exercise are described below, where mitigation measures have been developed addressing the pertinent stakeholder concerns.

2.3. PRIMARY STAKEHOLDERS CONSULTATION

Apart from gathering of quantitative data through household survey of the area of influence of the project and survey of local community to share the information about the project and record their concerns/ feedback associated with this project. In this context, nearest community shared their view point regarding the assessment especially procedure for entering their concerns/ grievances, employment opportunities, and implementation of the project.

9.5.1. Topics for Discussion

The topics discussed in the consultations were:

- Employment and livelihoods of communities.
- Fire Safety from Depot
- Contractor's camp and access
- Environmental issues during construction and operation of project

9.6 PROPONENT

All possible impacts and mitigation measure related to the project were discussed with the proponent and management. They assured to take all suggested mitigation measures to control any discrepancy arose by the project and to make the project environment friendly.

9.7 THE RESPONSIBLE AUTHORITY

The Vanguard Chemicals shall be the responsible authority to take all measures prior to start the project and during operation.

9.8 OTHER DEPARTMENTS AND AGENCIES

For the impact analysis detailed with the management, local community, educational institutes, health institutes, hospitals and NGOs. All issues were discussed related to implementation of the project. Scoping sessions, focused group discussion and way side consultations were held with the relevant stakeholders in the area.

Environmental Experts & Other Departments Discussion:

When Discussion has been made with Environmental researchers & students and other concerned departments. They were very much interested for this project to be installed in the Sheikhpura District. As it will provide employment opportunity to locals.

Public Consultations:

The consultations were made with the local community to share the information about the project and record their concerns/ feedback associated with project.

7.4.1 Concerns Regarding the Project:

During the field survey, people were asked about their views regarding the said Project. In general, local community has positive attitude towards this said Project that this will help to improve the development of the area.

7.4.2 Major Stakeholders identified

In the Project Area, all the possible stakeholders were identified during the survey. Following is the list of potential stakeholders in the Project Area

- Local residents Teachers
- Shop owners
- Office Workers Laborers
- Pedestrians
- Mosque users.
- Transport users
- Environmental Experts
- Responsible authority & other departments

Issues Discussed

Following issues were discussed during the stakeholder 's consultation:

- Overall activities of the project and their possible impacts.

- Possible impacts on natural vegetation, flora and fauna
- Possible mitigation measures;
- Beneficial factors and involvement opportunities of the local people in the set of activities of Project; and
- Management of traffic during construction and operational phase of the project.

7.5.1 General

Majority of stakeholders appreciated the project and taken it as a necessary step towards the current situation of waste problems. Few people had some reservations regarding the emissions of gases.

7.5.2 Environmental

Few people were concerned about the gaseous air emissions due to the operation of the furnace. Some people also show their apprehension regarding noise pollution due to loading and unloading of billets and raw scraps, respectively.

7.5.3 Socio Economic

Expectations about employment opportunities and community development were extremely high among all stakeholders.

Pictorial Evidence of Public Consultation

	
<p align="center">Consultation with proponent team</p>	<p align="center">Consultation With Locals</p>

SOCIOECONOMIC SURVEY AND PUBLIC CONSULTATION

For ascertaining the perceptions of different stakeholders about the project, meetings were held with them. These meetings were held in an open atmosphere, in which participants expressed their views freely. Informal group discussions were also held as an additional tool for the assessment of the perceptions of the stakeholders

Consultation Areas:

1. Lahore Jaranwala Road

List of people consulted

List of people consulted

Sr. No.	Name of Respondent	Education Status	Age	Occupation
1	Asim ali	Middle	33	Worker
2	Waleed ali	Matric	29	Guard
3	Rahat quershi	Primary	42	Driver
4	Fahim	Intermediate	38	Shopkeeper
5	Suleman Khan	Graduation	26	Employee
6	Farhad	Nil	21	Labour
7	Muhammad Arshad	Nil	18	Labour
8	Muhammad Tayyab	Graduation	22	Student
9	Hamid ali	Undergraduate	20	Intern

10	Rizwan ali	B.sc	40	Employee
11	Irfanullah	Primary	38	Driver
12	Saeed Rasool	Nil	35	Labor
13	Nabeel awan	Intermediate	28	Employee
14	Syed Nasir Khan	B.A	30	Employee
15	Waqif Shah	Middle	32	Shopkeeper
16	Hikmat Shah	Matric	37	Guard
17	Gul khan	Matric	34	Worker
18	Gul Sher	Intermediate	28	Shopkeeper
19	Astam Khan	Intermediate	26	Salesman
20	Muhammad Umer	Graduation	25	Medical Wrap
21	Salma Bashir	Nil	40	Nil
22	Bashir qadri	Intermediate	18	Student
23	Jahanzeb	Matric	24	Guard
24	Rasheed Khan	Middle	40	Driver
25	Shaheen Idrees	Matric	27	Worker
26	Sabir Khan	Nil	33	Labour
27	Alam Noor	B.Com	24	Employee

28	Ali Rehman	Intermediate	21	Salesman
29	Abdul Waheed	Masters	30	Self Employed
30	Gul Rasool	Nil	36	Labour

Awareness Regarding the Project

Out of total 30 respondents, 56% knew about the project whereas 44% were not aware of the project planning and implementation.

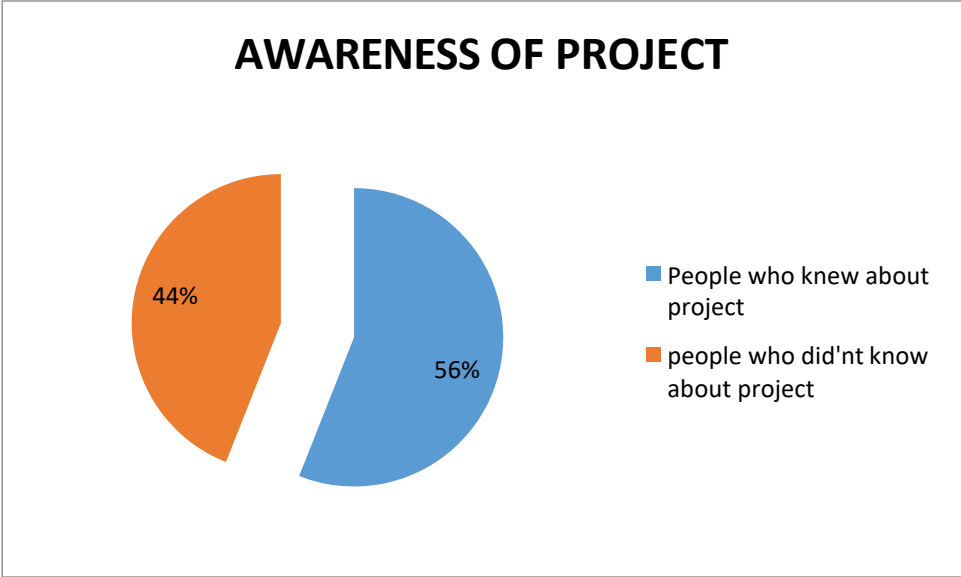


Figure 6-6: Awareness of project

Acceptability of the Project

Majority of the respondents, 99% favored the construction of the project keeping in view its importance. People had following comments regarding project:

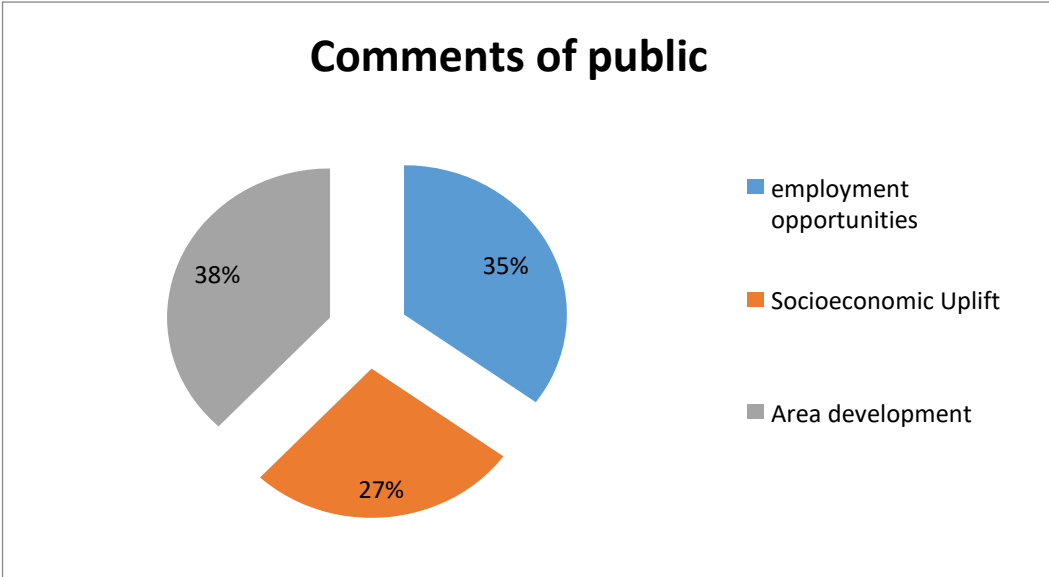


Figure 6-7: Comments of public

Concerns and solutions:

COMPONENTS	CONCERNS	SOLUTIONS
Environmental Enhancement	Trees should be planted to avoid any impact	<ul style="list-style-type: none"> • Trees will be planted along boundary of project • Indigenous trees around the facility should be planted
Socio-Economic Uplift	Workers should be hired from local community	<ul style="list-style-type: none"> • Proponent has considered hiring labor from local community to enhance the socio-economic condition of the area as this aspect is included in the scope of the project.
Fire Hazard	Accidental fire could pose potential hazard to local people	<ul style="list-style-type: none"> • Installation of Fire Alarms & Fire extinguisher's • Installation of Smoke Detectors.

Stakeholders Consultation

S #	Participant	Designation	Concerns/Remarks
Responsible Authority			

1	Rizwan Ali	Inspector Environment	<ul style="list-style-type: none"> • Environmental enhancement measures such as; Tree plantation, monitoring and safety should be ensured • Septic Tank should be constructed • Fire Alarms & Fire Extinguishers must be installed for safety purposes •
Other Departments			
1	Ahsan Raza	BI local govt	<ul style="list-style-type: none"> • There is no endangered/indigenous species • However, plantation should be done to enhance environment • Project is away from population no fire hazard exists
Proponent's Environment Management Team			
1	Proponent and Environment Management Team	M. Shehzad	<ul style="list-style-type: none"> • Local employment will be ensured during construction phase • Tree plantation will be done to make project environment friendly • Fire safety measures should be ensured • Quality will be ensured
Environmental Practitioners and Experts			
1	Saif	PhD. Environment	<ul style="list-style-type: none"> • Health and safety arrangements must be provided • All type of waste should be managed to avoid nuisance
Affected and Wider Community			
1	Mr. Khurram	NGO (Parho Barho Punjab)	<ul style="list-style-type: none"> • Local employment should be ensured • Proponent shall work for betterment of community

Section-08

**Emergency Response Plan and
Evacuation/Exit Plan**

Section-8

EMERGENCY RESPONSE PLAN & EVACUATION/EXIT PLAN

6 EMERGENCY RESPONSE PLAN

6.1 OBJECTIVE OF EMERGENCY RESPONSE PLAN

Emergency preparedness helps to minimize the human suffering and economic losses that can result from emergencies. It should be understood that the size and density of projects, as well as their access and location, have a bearing on the degree of planning necessary for emergencies. It is therefore strongly recommended that the constructor ensure that a member of staff on site assist in developing the emergency response plan.

6.2 SCOPE OF EMERGENCY RESPONSE PLAN

This plan assesses risk, assign role and responsibilities and give the major steps to be followed in any emergency situation. Its increases understandings of workers and officials in handling different emergency situations which may occur at project area.

6.3 EMERGENCY SITUATIONS

Following emergencies may occur at workplaces:

- fire
- fuel spillage
- gas leaks
- explosions
- injury from machinery and equipment
- fall, climbing accident
- emergency as a result of environmental conditions (e.g., heat, cold, wet, snow, wind, lightning, bushfires, floods) emergencies requiring evacuation
- hazardous substances and chemical spills
- internal emergencies such as loss of power or water supply and structural collapse
- serious injury events or medical emergencies
- bomb threats
- civil disorder or criminal acts such as robberies and shootings

6.4 GENERAL EVACUATION PROCEDURE

It is not always necessary to evacuate a unit/plant during an emergency. A power outage, for instance, does not necessarily call for evacuation of a unit. The overall safety of the unit must first be evaluated: lighting, hazardous materials, ventilation systems, and other hazardous operations. If the unit can be safely occupied, evacuation is not necessary. In the case of evacuation the workers in the effected zone receive instructions from their supervisor or designated person. As per instruction the workers will immediately leave their places of duty and assemble at the assembly point.

- Area supervisor should roll call the employees to ensure all are out of danger zone.
- On receiving first information of emergency situation the administrative head should contact the Security Officer to ensure that alarm system is activated or not.
- After assessing the emergency situation Security Officer or designated person instruct through telephone to initiated the emergency response procedure and call the responsible personnel at site.
- Administrative Head may also call the external help like fire brigade, police, bomb disposal squad, ambulance etc. and communicate with them.
- Security Officer after consulting the Administrative Head may order the evacuation of workers from affected area.

If evacuation is ordered, follow these procedures:

- Stay calm, do not rush, and do not panic.
- Safely stop your work.
- Gather your personal belongings if it is safe to do so.
- If safe, close your door and window, but do not lock them.
- Use the nearest safe stairs and proceed to the nearest exit. Do not use the elevator.
- Wait for any instructions from emergency responders.
- Do not re-enter the building or work area until you have been instructed to do so by the emergency responders.

6.5 FIRE EMERGENCY RESPONSE PLAN

a) Purpose

To minimize loss and injury, any type of fire, indoor or outdoor, should be reported to the fire department by calling given emergency contact number. Should there be a building

fire, all building occupants are to be evacuated for their personal safety. Fire extinguishers have been provided within the building to extinguish small fires

b) Scope:

All employees are to be aware of the fire emergency plan and take prompt action according to the following procedure:

c) Procedure

i) BE PREPARED

Know the location of the fire exits, fire alarms, and fire extinguishers in your workplace. Familiarize yourself with the procedures below and participate in fire extinguisher training so that you are prepared in case of a fire. %

ii) IF YOU DISCOVER A FIRE

If you see or hear a fire, or smell smoke, pull the closest fire alarm. %

iii) TAKE IMMEDIATE ACTION AND DIAL EMERGENCY NUMBER

Dial 1122 or any emergency response number given by management, from a safe location and give the operator all the pertinent facts. When the operator answers, give the following information:

- YOUR NAME
- PHONE NUMBER
- LOCATION THAT YOU ARE CALLING FROM
- Give the precise nature of the fire, (i.e.: car fire, chemical fire, electrical fire, outdoor grass fire, building fire, fuel fire).
- Tell operator which entrance the fire truck should enter and describe our location.
- Indicate whether there are any injuries, number and extent of those injuries.
- DO NOT HANG UP until given permission to do so by the operator.
- Dispatch an employee to the entrance to guide the fire truck to the fire area

d) Use of Existing Equipment

You might try to put out the fire, if it is small enough, using existing equipment – use your best judgment (if trained and confident)

In the event that the fire is small enough to be extinguished by a fire extinguisher, fire extinguishers have been placed around the building and are identified. Become aware of the fire extinguisher locations and familiar with accessibility. If the fire does not go out or

spreads after attempting to extinguish flames, leave the area immediately and close all doors on your way. %o

e) Evacuation

If the fire is clearly out of control, notify all others in danger, YELL “FIRE” and evacuate all personnel from the building to the designated assembly station outside the building and help others in doing so. Leave buildings by the nearest safe exit. All employees, guests and visitors are to proceed to the designated assembly station in the employee parking area and ensure that their names are on a list of those who are out of the building. This list will be prepared by a designated fire response personal. Material Safety Data Sheets are to be taken by the responsible person and made available to the fire department, as required. All personnel are to wait outside the building as directed by the Fire Department. You are to re-enter the building only after the fire department has given permission to do so.

f) If your clothes catch fire

- Stop whatever you are doing.
- Drop to the ground.
- Roll to smother the flames.
- If someone else’s clothes catch fire, have them stop, drop and roll.
- Try to smother the flames with a piece of clothing. %o

g) Using an Extinguisher

- Pull the safety pin at the top of the extinguisher
- Aim the nozzle/hose at the base of the flames
- Squeeze or press the handle
- Sweep from side to side at the base of the fire until it is out

h) Know your Extinguisher

- Type A (green triangle) – use for paper and wood
- Type B (red square) – use for flammable liquids such as gas, oil, paint
- Type C (blue circle) – use for electrical fires involving wires or appliances%o

I) Notify Management

The manager, if not on-site, is to be notified immediately. Emergency numbers should be posted on an emergency contact list.

j) Responsibility

Fire supervisors are responsible to ensure everyone is out of the building and directed to the specified assembly station for a roll call. Supervisors are to ensure that senior management has been notified of the fire, if not on location.

k) Fire Fighting Plan

A detailed fire fighting plan is mentioned in layout plan attached with this report as appendix. List of fire fighting equipments is described in table below.

Table 8.1: List of Fire Fighting Equipment

Equipment	Quantity	Location
Fire HYDRANTS 1000 USGPM	04	As shown on drawing
HOSE CABINET	06	As shown on drawing
MOBILE FORM TROLLEY (MFT) 450 US GALLON	02	As shown on drawing
FOAM MONITOR	02	As shown on drawing
PORTABLE FIRE EXTINGUISHERS,ABC DRY CHEMICAL POWDER 6KG,NIPPON PAN-20 SD DCP 08	1	no warehouse
		no Control room
		no Generator and Switch Room
		no Office Building
		no Gate House
		no Gantry
PORTABLE FIRE EXTINGUISHERS, CARBON DI OXIDE 5KG, NIPPON NC-7. CO ₂	06	no warehouse
		no Substation house
		no: Office building
		no: Invoice room
		no :Control room
FIRE EXTINGUISHERS,ABC DRY CHEMICAL POWDER 50KG(TROLLY MOUNTED)	2	1 in gantry & 1 in pump room
SAND BUCKETS WITH STAND	9	no: Pump house
		no: gantry
		no warehouse

6.6 SPECIAL FIRE EMERGENCY RESPONSE AND FIRE-PROTECTION PRECAUTIONS

- **“Joint Code of Practice”** includes fire protection measurements and compliance with the regulations and requirements is to tackle with fire emergency in power generation facility.
- **Fire-Resistant Materials-** To ensure the stability of a power generation facility in the event of a fire, the supporting structure and ceilings must be resistant to fire. The characteristic “fire resistant” must be defined in the applicable standards. However, this means that the requirements to be met by fire resistant parts can easily differ from one country to the next, depending on the standards applied. The same holds true for the inspection procedures specified for verification.
- **Fire Compartments** Fire can also spread via the outer facade if windows have been shattered by the heat so it is perfectly appropriate to use fire resistant glazing, Partition walls, ceilings must be fire resistant and made of noncombustible materials.
- **Doorways** should at least be sealed with tightly closing, fire-retardant doors; any other openings required in the walls must be sealed in an equivalent manner.
- **Partition walls** in corridors should reach right up to the structural ceiling.
- **Smoke vents** must be installed at the top of all stairwells; internal stairwells must be equipped with a mechanical, automatically activated ventilation system connected to an emergency power supply. If a fire breaks out, excess pressure must be generated in the stairwells to prevent the ingress of smoke.
- **Ventilation and Air-Conditioning Systems-** Ventilation and air-conditioning systems must be installed in such a way that fire or smoke cannot be transmitted to stairwells and other floors or fire compartments.
- **Fire Fighting-** Fire extinguishers, fire-fighting water to every point on floor and an automatic sprinkler system is the most effective protective measure for fighting and controlling a fire.

Supportive Services

One electrician, one mechanic and four general workers (for salvage operations) will be arranged to ensure the necessary services to unaffected areas continue and removal of any equipment etc. which may be affected by the incident.

Section-09

Conclusion and Recommendation

Section - 9

CONCLUSION AND RECOMMENDATIONS

7 CONCLUSION AND RECOMMENDATIONS

In the light of this Environmental Impact Assessment some recommendations are made:

- Idea of sustainable development should be applied during the operational phase of the project
 - Environmental Management Plan should be implemented in its true sense and should be revised in case of any change of process
 - Project management should give due weight-age to Health, Safety and Environment.
- An unbiased conclusion is drawn on the basis of the findings of EIA, which states that the proposed installation of Proposed Oil Depot will not pose any irreversible adverse impacts on surrounding environment and population but it may enhance the standard of living of native people. Therefore, it is recommended to the competent authority may please be issue Environmental Approval for the construction and operation of the project.

References

REFERENCES

Listed below are some of the documents, reports and other references consulted during the preparation of this report:

1. Information and data provided by project proponents;
2. Project Pre-feasibility Study Report;
3. Technical Design Data related to the project.
4. Information gathered through discussions with the project related persons of the project proponent;
5. Information collected from the Technical documents of various suppliers of machinery/equipment.
6. Punjab Environment Quality Standards for Ambient Air
7. Punjab Environment Quality Standards Noise Levels
8. Punjab Environment Quality Standards for Drinking Water
9. Pakistan Environmental Protection Act, 1997;
10. The Punjab Environmental Protection (Amendment) Act 2011 covers aspects related to:

The protection, conservation, rehabilitation and improvement of the environment and the prevention, control of pollution and promotion of sustainable development;
Establishing complete regulatory and monitoring bodies, policies, rules, regulations and national environmental quality standards; and
11. Environment-related Laws in Pakistan and the Province of Punjab
12. Government of Pakistan, Pakistan Environmental Protection Agency, Policy and Procedures for Filing, Review, and Approval of Environmental Assessment, 2022
13. Workplace safety and health act 2011

Terms of References

TERM OF REFERENCES

1. The Consultant is required to carry out an Environment Assessment Study of the Project as required under section 12 of Pakistan Environmental Protection Act 1997/ Punjab Environmental Protection Act 2012.
 2. The Study should be comprehensive and should cover all aspects which are envisaged under the relevant national and provincial's laws & regulations including but not limited to:
 - Identification and recommendation for suitable solution/treatment/mitigation measures of emissions and effluents such as wastewater and sludge etc in accordance with Punjab Environmental Quality Standards (PEQS).
 - Identification and recommendation for suitable solution/treatment/mitigation measures of solvents, oils (tar), hazardous waste, organic compounds, steam, flue gases, particulate matter and chemical compounds harmful for the environment and other substances leading to air, noise, water and soil pollution in accordance with PEQS.
 3. The Study should be acceptable to the relevant national and/or provincial authorities (relevant authorities) in Punjab.
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LIST OF EIA STUDY TEAM WITH QUALIFICATION AND POSITION IN TEAM.

Name	Qualification	Position in the EIA/EIA Team
Muhammad Rehman Majeed	M.Phil (Environmental Science) GCU Lahore	Project Incharge And Supervisor
Ammara Anwar	MS Environmental Science PU-Lahore	Team Leader and Coordinator (Author of the Report)
Mohsin Ali	M.Phil Environmental Science GCU Lahore	Senior Environmentalist (Field Analyst)
Faisal Irshad	BS (Hons) Environmental Engineering (JET Lahore)	Environmental Engineer
Anum Waheed	BS (Hons) Environmental Science (GCU Lahore)	Research Associate (Author of the Report)