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List of Abbreviation

EMMP	Environment Management and Monitoring Plan
EPA	Environment Protection Agency
EPD	Environmental Protection Department
EIA	Environmental Impact Assessment
IEE	Initial Environment Examination
PEQS	Punjab Environmental Quality Standards
NGO	Non-Government Organizations
NOC	No Objection Certificate
HSE	Health, Safety and Environment
PEPA	Pakistan Environment Protection Act
PEPC	Pakistan Environmental Protection Council
PMD	Pakistan Meteorological Department
TDS	Total Dissolve Solids
TOR	Terms of Reference
WAPDA	Water and Power Development Authority
WASA	Water and Sanitation Agency
USA	United States of America

EXECUTIVE SUMMARY

INTRODUCTION

This executive summary presents an overview of the main findings of the Environmental Impact Assessment Report for the construction of Petroleum Storage Unit within the existing premises of M/S Walchem Industries Pvt Ltd Located at Plot # 299, Sundar Industrial Estate, Sundar Raiwind Road, District Lahore. **M/s Walchem Industries (Pvt.) Ltd** is an already operational unit that has already been granted a No Objection Certificate (NOC) by your esteemed office vide letter **No. AD(EIA)/EPA/F-25(IEE)/2014/958**, dated **02-12-2024**. In light of the above, we kindly request to process and issue the necessary environmental approval for the proposed construction of the petroleum storage unit. The primary objective behind the said Unit is likely to meet the increasing market demand for storage and distribution facilities for Petroleum Products. This objective stems from the opportunity to capitalize on the growing industrial activities, urbanization, and infrastructure development in the region, thereby expanding the owners' business operations strategically while ensuring compliance with regulatory standards for safe storage and handling.

For this instance, Environmental Impact Assessment of the project has been conducted in accord with the Punjab Environmental Protection Act, 1997 and IEE/EIA Regulations 2022. The process for conducting environmental assessment and the results of EIA is described in this document.

SALIENT FEATURES OF PROJECT:

1.	Project Title	Construction of Petroleum Storage Unit within the existing premises of M/S Walchem Industries Pvt Ltd.
2.	Project Location	Plot no 299 Sundar Industrial Estate, Sundar Raiwind Road Lahore.
3.	Nos of Storage Tanks and storage capacity	**Total Nos of Tanks:** 05 **Total Tank Capacity:** 2,17,458 Liters
3.	Proponent	Mr. M Shoaib
4.	Consultant	Environmental Services Pakistan
5.	Total Area of Project	3367.71 Sq.m
6.	Cost of Project	Approx. 900 million rupees.

PROJECT OBJECTIVES

The construction of petroleum storage unit within the existing premises of M/s Walchem Industries Pvt Ltd., located at Plot # 299, Sundar Industrial Estate, Sundar Raiwind Road,

District Lahore is driven by various objectives, including meeting the growing market demand for storage and distribution facilities for DPL, expanding their business operations strategically, improving logistics efficiency through dedicated storage infrastructure, ensuring compliance with regulatory requirements for safe handling and storage, enhancing competitiveness by offering superior storage solutions and reliable supply to customers, mitigating risks associated with storing materials, and fulfilling corporate social responsibility goals by contributing to the local economy.

SITE ALTERNATIVES

No site alternatives were considered as the proposed land is best possible place for commercial activities. This site is chosen because site is well located in regard to the following:

- Easy access
- No settlements in close vicinity
- No ecologically sensitive or declared protected area
- No historical, educational or religious site nearby
- No vegetation at the selected site

As no important religious, archaeological, historical or recreational site, or any other ecologically sensitive, declared protected area or poor population exists within close vicinity of the selected site. In view of these facts, it can be concluded that the Selected Site is best suited for the project and will not pose any adverse impact or threat on any component of the environment and will not disturb ecology.

ECONOMIC ALTERNATIVE

The immediate economic benefits of the proposed project are a generation of employment opportunities and revenue. The direct and indirect jobs creation will occur in a broad range of industries such as construction services, repair and maintenance, electricity supply, supplies retailing, motor vehicle and parts retailing, water supply, sewerage and drainage services, waste collection, treatment and disposal services, gas supply, rental and hiring services, garden supplies retailing, cleaning and janitorial, pest control, printing, etc.

Direct Job Creation: The project timeline is of one years, which means that the project will create multiple jobs.

ENVIRONMENTAL ALTERNATIVE

The proposed project site is located in an industrial area. There may be potential environmental and human health impacts of the proposed project during the construction phase of the project. However, the proposed project will have an efficient solid waste management system, and features of the eco-friendly building, such as the use of energy-efficient items, have been planned.

Considering the environmental protection measures to be taken during the construction and operational phase of the project and the sustainable features of the proposed project, it can be implied that the proposed project will enhance the environment of the project area during the operational phase of the project especially when looking at the alternatives to the project.

SCREENING

Section 12 of Punjab environmental protection act, 1997 amended (2017) states "No proponent of project shall commence construction or operation unless he has filed with the government agency designated by Federal Environmental Protection Agency or provincial agencies, as the case may be or, where the project is likely to cause and adverse environmental effects an environmental impact assessment (EIA), and has obtained from the government agency approval in respect thereof." PEPA act provided the guidelines for categorizing the projects.

The Proposed Project; i.e., Construction of Petroleum Storage Unit within the existing premises of M/s Walchem Industries Pvt Ltd., falls under Schedule-II, Category A (Energy), Clause 5 "Oil and gas extraction projects including exploration, production, gathering systems, separation and storage, under Punjab Environmental Protection (Review of EIA/IEE) Regulations,2022. Thus, and EIA report is being prepared and submitted accordingly for approval. TORs of the study under clause 5 (f) of policy and procedure for the filing, review and approval of environmental assessment are attached as **Annexure-A** with this EIA report.

ENVIRONMENTAL CONSULTANT

An Environmental Impact Assessment (EIA) study report has been prepared to identify and predict the significant environmental impacts likely to arise from the commencement of the Proposed Project, along with environmental impact statement followed by delineation of appropriate Environmental Management Plan and Environmental Monitoring Plan to have a control over the adverse environmental impacts and to check the efficiency and effectiveness

of the mitigation measures being implemented. For the purpose of this EIA, and to get Environmental Approval from Environmental Protection Agency (EPA) Punjab, management of M/S Walchem Industries Pvt Ltd has decided to engage the services of Environmental Consultant, M/S Environmental Services of Pakistan (ESPAK).

PROJECT OUTLINE

The Proposed Project i.e. Construction of Petroleum Storage Unit within the existing premises of M/s Walchem Industries Pvt Ltd., located at Plot # 299, Sundar Industrial Estate, Sundar Raiwind Road, District Lahore". **M/s Walchem Industries (Pvt.) Ltd** is an already operational unit that has already been granted a No Objection Certificate (NOC) by your esteemed office vide letter **No. AD(EIA)/EPA/F-25(IEE)/2014/958**, dated **02-12-2024**. In light of the above, we kindly request to process and issue the necessary environmental approval for the proposed construction of the petroleum storage unit. The proposed project will cover about 3,3671 SQ.M of land which has already been purchased by the proponent. The subject project includes storage Tanks of the Petroleum product i.e. IPA (DP), Acetic Acid (NDP), Ethyl Alcohol, Ethyl Acetate & Methanol. The Total capacity of the proposed Petroleum Storage Unit is 2,17,458 Liters. Total area of the proposed project is 3,367.71 Sq.m. The primary objective behind the Petroleum Storage Unit by the owners is likely to meet the increasing market demand for storage and distribution facilities for DPL. This objective stems from the opportunity to capitalize on the growing industrial activities, urbanization, and infrastructure development in the region, thereby expanding the owners' business operations strategically while ensuring compliance with regulatory standards for safe storage and handling.

Following Products will be stored:

- IPA (DP)
- Acetic Acid (NDP)
- Ethyl Alcohol
- Ethyl Acetate
- Methanol

The Storage Tank Schedule will be as followed:

Sr. #	Description	Tank Capacity
1	IPA (DP)	36206 Liters

2	Acetic Acid (NDP)	36206 Liters
3	Ethyl Alcohol	36206 Liters
4	Ethyl Acetate	54420 Liters
5	Methanol	54420 Liters

THE MAJOR IMPACTS

In order to identify all the activities associated with the project during operation phase with potential to cause adverse environmental impacts and harm a thorough review has been conducted. Project does not have any significant adverse impacts on the nearby community and on environment. Overall, the project has positive impacts on the local population and country as a whole. Moreover, area for plantation is also reserved for air purification within the project vicinity.

Table: Summary of Environmental impacts of the project during the project activities and their mitigation measures

Potential Impact	Criteria for determining Significance	Key Mitigation Measures
Solid waste Management— If solid waste will not be managed properly, it may cause negative impacts	Solid waste may produce in result of machinery installation e.g. wasted parts of machinery, wasted screws, nails and bolts. But most of the solid waste will be of domestic type.	Machinery installation waste should be sold in scrap as it can be used by steel and iron industry. Domestic waste should be disposed of properly, handed over to contractors, placed in bins; Proper solid waste management plan should be devised and implemented.
Waste water - water used for washing purposes	PEQS parameters	Waste water should be treated in the Effluent treatment plant and then disposed of in the nearest drain.
Noise- Noise may be generated during fitting and installation activities (drilling etc.) and from	OSHA standards	Activities generating high levels of noise should be minimized at the project site. If the noise level will exceed the permissible limits with reference to

generators at the project site; which may be a nuisance for the workers as well as neighbors		Punjab Environmental Quality Standards and OSHA standards, following recommendations are suggested to take action against the high noise levels: • Ear muffs and ear plugs are recommended in case of high noise levels. • Rubber wounds should be placed underneath the generator to avoid the vibration.
Socioeconomic impacts—Inter-cultural differences between the project staff from other areas and the local community may arise due to the subject project. Positive socioeconomic impacts due to increased infrastructure, employment opportunities and economic growth.	No community complaints are expected. Increased employment facilities Increased infrastructure	Training of the non-local project staff on local culture and norms; Avoidance of unnecessary interaction of local population with the non-local project staff. Employment opportunities should be provided to the local people.

Table: Summary of Environmental impacts of the project during the construction phase of project and their mitigation measures

Potential Impact	Key Mitigation Measures
Dust Emissions- Particulate matter emissions during production activities can affect the air quality in the working area and be a nuisance for the workers' health. Gaseous emissions from site generators can result in deterioration of ambient air quality of the outdoor environment.	PPEs i.e. masks should be provided to workers during the working hours. Proper ventilation will be provided in the working area. Vehicles to use for the transportation of materials should be properly tuned. Monitoring should be conducted as per EPA PEQS Rules on regular intervals.
Machinery Noise- Working of machinery can be a nuisance for the workers in the working area.	PPEs i.e. ear muffs will be provided to workers in case of high noise.
Health & Safety Issues- Health and Safety issues e.g. Cuts and Injuries may be caused during the machinery handling.	Proper training of the staff should be conducted on regular basis to avoid the accidents and training record will be maintained by the management. First aid measures should be provided at the workplace. HSE policy will be formulated and implemented by management. Use of PPEs will be ensured during project activities.
Discharge of wastewater- The discharge of untreated wastewater can be a negative impact.	No wastewater will be disposed of into drain without having treatment in wastewater treatment plant. After treatment wastewater will be disposed of into nearest drainage system. Compliance of PEQS for Municipal and Liquid Industrial Effluents will be ensured. Monitoring will be conducted as per PEQS and reports will be submitted to EPA as per Rule (if required)
Solid waste management- Improper solid waste management may cause	Waste bins will be placed at suitable areas at unit and contract will be made with EPA approved

health problems and aesthetic issues	contractor for hazardous waste disposal. Domestic waste should be handed over to local contractors for safe disposal of the waste.
Groundwater—The increased withdrawal of groundwater for the project will affect the groundwater resources of the project area	No impact on the community groundwater needs is envisaged as a result of the project (ensured by management)

PROPOSED ENVIRONMENTAL MONITORING

To oversee the environmental performance of the project through its lifecycle enforcing the PEQS an Environmental Monitoring Program should be formulated which ensures effective surveillance of the environmental parameters at various stages of the project development and compliances with PEQS and legal obligations. Monitoring for following Environmental Parameters is recommended: & attached as an **Annexure**.

- **AMBIENT AIR**

  Monitoring for ambient air should be conducted during operational activities of the project and report should be submitted to EPA Punjab.

- **NOISE**

  Regular monitoring for noise level should be maintained periodically during operation phases of the project and report should be submitted to EPA Punjab as per rule.

- **WATER QUALITY**

  Regular monitoring of water quality should be conducted during operational phases of the project and report should be submitted to EPA Punjab. Record should be maintained regarding the underground water pump and consumption.

Recommendation: Environmental Monitoring data log book should be maintained by the project proponent.

CHAPTER # 1.

INTRODUCTION

This Section of the report provides an overview of the rational of the Project, objective of project, requirement of the project, purpose of the report and approach adopted to conduct the Environmental Impact Assessment Study.

PURPOSE OF THE REPORT

Environmental Impact Assessment (EIA) report is being submitted to the Environmental Protection Agency (EPA), Government of the Punjab, Lahore for the compliance of Section 12 of Punjab Environment Protection Act-1997 (Amended 2012) for obtaining No Objection Certificate (NOC). The other relevant regulations and guidelines considered while preparing this EIA report include:

- 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

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

IDENTIFICATION OF THE PROJECT AND PROPONENT

The proponent has been submitting this EIA report, the said project is proposed and the proponent wants to get Environmental approval for the Construction of Petroleum Storage Unit within the existing premises of M/s Walchem Industries Pvt Ltd.

PROPONENT:

Name: Mr. M. Shoaib

CNIC# 42301-3963894-9

Mailing Address: Plot # 299, Sundar Industrial Estate, Sundar Raiwind Road, District Lahore. **M/s Walchem Industries (Pvt.) Ltd** is an already operational unit that has already been granted a No Objection Certificate (NOC) by your esteemed office vide letter **No. AD(EIA)/EPA/F-25(IEE)/2014/958**, dated **02-12-2024**. In light of the above, we kindly request to process and issue the necessary environmental approval for the proposed construction of the petroleum storage unit.

For further details, CNIC of the proponent and other relevant documents are attached.

DETAILS OF CONSULTANT

Environmental Services of Pakistan (ESPAK) is an independent company, who conducts IEE, EIA, EMP and other environmental investigations through its panel of environmental consultants, public participation practitioners and experienced environmental managers. The company has its own recommended instruments to check the baseline environmental data/PEQS and lab analysis facility for water, waste water priority parameters.

Contact: Environmental Services of Pakistan (ESPAK).

Office No. Office No. 731, Shah Jilani Road, Block 2 Sector D1 Lahore

Tel: (042) 35154015; 0312-0839999

Email ID: info@espak.com.pk

The current study was carried out by the following professionals:

#	Name of Team Members	Designation	Qualification
1	Shagufta Tahir	Environmentalist	M.Phil. Environmental Science
2	Asma Akram	Environmentalist	M.S Environmental Science
3	Ali Ramzan	Environmentalist	B.S Environmental Sciences
4	Shahzad Ahmad Khan	Project Manager	MBA Marketing

BRIEF DESCRIPTION OF NATURE, SIZE AND LOCATION OF PROJECT

Subject project for which this Environmental Impact Assessment (EIA) Study has been conducted is the construction of Petroleum Storage Unit within the existing premises of M/S Walchem Industries Pvt Ltd. The Total capacity of the proposed Petroleum Storage Unit is

2,17,458 Liters. The subject project includes storage Tanks for the Petroleum product i.e. IPA (DP), Acetic Acid (NDP), Ethyl Alcohol, Ethyl Acetate & Methanol. The Total capacity of the proposed Petroleum Storage Unit is 2,17,458 Liters. Total area of the proposed project is 3,367.71 Sq.m. The estimated cost of the project is Approx. 900 million rupees. **M/s Walchem Industries (Pvt.) Ltd** is an already operational unit that has already been granted a No Objection Certificate (NOC) by your esteemed office vide letter **No. AD(EIA)/EPA/F-25(IEE)/2014/958**, dated **02-12-2024**. In light of the above, we kindly request to process and issue the necessary environmental approval for the proposed construction of the petroleum storage unit.

The core component of the project comprises the installation of five storage tanks, with a total capacity of2,17,458 Liters. These tanks will be constructed in compliance with OGRA standards and equipped with advanced safety features, including double-walled construction, leak detection systems, and spill containment measures.

In addition to the storage tanks, the project will include the construction of executive and managerial offices to oversee the operations of the facility. These office spaces will provide administrative support and serve as hubs for managing day-to-day activities.

To ensure the safety of personnel and the surrounding environment, the project will be equipped with fire hydrant points strategically located near the underground water tanks. Additionally, comprehensive emergency response protocols will be established to address any potential incidents, including spills, leaks, or other environmental emergencies.

The project will adhere to stringent precautionary measures to mitigate the risk of environmental harm. This includes regular inspection and maintenance of storage tanks, implementation of best practices for handling and transportation of DPL, and training of personnel on emergency response procedures.

The project will adhere to all relevant environmental regulations and standards set forth by regulatory authorities. This includes obtaining necessary permits and approvals for the construction and operation of the facility, as well as ongoing compliance monitoring to ensure adherence to environmental requirements.

Following Products will be stored:

- IPA (DP)

- Acetic Acid (NDP)
- Ethyl Alcohol
- Ethyl Acetate
- Methanol

The Storage Tank Schedule will be as followed:

Sr. #	Description	Tank Capacity
1	IPA (DP)	36206 Liters
2	Acetic Acid (NDP)	36206 Liters
3	Ethyl Alcohol	36206 Liters
4	Ethyl Acetate	54420 Liters
5	Methanol	54420 Liters

STORAGE TANKS SPECIFICATIONS

The core component of the project comprises the installation of five storage tanks, with a total capacity of 2,17,458 Liters. These tanks will be constructed using corrosion-resistant materials such as steel or fiberglass-reinforced plastic (FRP). They will feature double-walled construction, providing an extra layer of protection against leaks and spills. A leak detection system will be installed between the inner and outer walls to monitor for leaks.

The tanks will be equipped with ventilation systems to prevent pressure buildup and ensure proper vapor ventilation. Automated monitoring and control systems will be in place to track tank levels, temperatures, and other parameters, with remote monitoring capabilities for real-time oversight. Safety features include overfill protection devices, grounding and bonding systems to prevent static electricity buildup, and emergency shutoff valves for rapid isolation during emergencies.

Tanks will be labeled with appropriate signage indicating contents, capacity, and safety precautions, with emergency contact information displayed prominently. Regular inspection, maintenance, and testing programs will ensure the integrity and safety of the tanks, including routine testing and calibration of monitoring systems.

LOCATION

Subject unit is located at Plot no 299 Sundar Industrial Estate, Sundar Raiwind Road Lahore.

The Location Coordinates are:

- **31°16'29 55"N**
- **74°10'29 64"E**

North…….. Open Plot

South…… . Open Plot

East……. Open Plot

West…… Access Road

Figure 1: Aerial view of the project site/Marked area of proposed project

SCOPING

SPATIAL AND TEMPORAL BOUNDARIES OF ENVIRONMENTAL ASSESSMENT

The project falls in Industrial area of district Lahore. This project spans at the area of 3,367.71 SQ.M. The Above map shows the spatial and temporal boundaries of the project.

For further details, Google earth map of the project on A3 page and layout plan of the project site is attached as **Annexure** with the report.

IMPORTANT ISSUES AND CONCERNS RAISED DURING CONSULTATION

Important issue and concerns raised by the community during consultation include the impact of gas leakage. However, the proponent has assured that a proper detection system will be installed, and comprehensive safety measures will be implemented to mitigate any risks. Hence will not cause any issues to the community. The community was also concerned about employment for local people. The proponent made sure that maximum job opportunities for plant management will be provided to the residents.

SIGNIFICANT IMPACTS TO BE DETERMINED

A key concern regarding the Construction of Petroleum Storage Unit within the existing premises of M/S Walchem Industries Pvt Ltd., is the risk of gas leakage, which could pose significant safety hazards. However, the proponent has provided assurances that the facility will be equipped with a reliable gas detection system to promptly identify any leaks. Additionally, comprehensive safety measures, including proper ventilation, emergency response protocols, and fire safety systems, will be implemented to ensure the safety and security of the plant and surrounding areas. These precautions aim to minimize the risks associated with gas leakage and ensure the plant operates within safety standards.

SCREENING

The Proposed Project; i.e., Construction of Petroleum Storage Unit falls under Schedule-II, Category A (Energy), Clause 5 “Oil and gas extraction projects including exploration, production, gathering systems, separation and storage, under Punjab Environmental Protection (Review of EIA/IEE) Regulations,2022.

CHAPTER 2.

ANALYSIS OF ALTERNATIVES

The consideration of alternatives is a crucial step in evaluating the potential environmental effects of a proposed project. The purpose of assessing alternatives is to identify and compare different options to achieve the project's objectives, taking into account environmental, social, and economic considerations.

SITE ALTERNATIVES

No site alternatives were considered as the Unit will be established on proponent's owned land in already existing premises of the Unit. This site is chosen because site is well located in regard to the following:

- Easy road access
- Proponent owned land
- No settlements in close vicinity
- No ecologically sensitive or declared protected area
- No historical, educational or religious site nearby
- No vegetation at the selected site

As no important religious, archaeological, historical or recreational site, or any other ecologically sensitive, declared protected area exists within close vicinity of the selected site. In view of these facts, it can be concluded that the Selected Site is best suited for the project and will not pose any adverse impact or threat on any component of the environment and will not disturb ecology.

TECHNOLOGY ALTERNATIVES

Since no technology will be used in this project and this project is an DPL storage unit which will only be used to store DPL, technology alternatives have not been considered in this project. However, automatic storage and handling can be promoted to avoid storage risk.

ENVIRONMENTAL ALTERNATIVES

When considering environmental alternatives for the DPL storage unit, several approaches can be explored to minimize the project's impact on the environment and promote sustainability. Here are some environmental alternatives to consider:

GREEN BUILDING DESIGN:

Implementing green building principles in the design and construction of the storage facility can enhance energy efficiency, reduce resource consumption, and minimize waste generation. This can include using sustainable materials, incorporating renewable energy sources like optimizing the building's orientation for natural lighting and ventilation.

CONTAINMENT AND SPILL PREVENTION:

Implementing robust containment measures and spill prevention systems can significantly reduce the risk of environmental contamination in the event of leaks or spills. This may involve installing secondary containment systems, leak detection technologies, and automated shut-off systems to minimize the spread of hazardous materials.

ADVANCED MONITORING AND REPORTING:

Utilizing advanced monitoring technologies and real-time reporting systems can enhance environmental compliance and response capabilities. Implementing air quality monitoring stations, groundwater monitoring wells, and remote sensing technologies can provide early detection of environmental risks and facilitate timely mitigation efforts.

STORMWATER MANAGEMENT:

Effective stormwater management practices will be Implemented to prevent pollution of nearby water bodies and reduce the risk of runoff contamination. This can include installing retention ponds, vegetative buffers, and permeable pavement to capture and treat stormwater runoff before it enters natural waterways.

ECONOMIC ALTERNATIVES

Economic alternatives were considered taking into consideration the capital and operation costs for the proposed unit. Land cost, infrastructure cost and machinery cost were taken into account as the deciding economic factor. So that the infrastructure and management costs get minimized due to already developed roads.

Also state of the art machinery will be employed considering it as one-time investment and thus minimizing the maintenance cost during the operational phase. Additionally, it will contribute towards uninterrupted production during operational phase.

CHAPTER # 3

DESCRIPTION OF THE PROJECT

TYPE AND CATEGORY OF THE PROJECT:

The subject project is the Construction of Petroleum Storage Unit which is constructed in already established unit premises under the name of M/s Walchem Industries Pvt Ltd. The Project site is located at Plot no 299 Sundar Industrial Estate, Sundar Raiwind Road Lahore. **M/s Walchem Industries (Pvt.) Ltd** is an already operational unit that has already been granted a No Objection Certificate (NOC) by your esteemed office vide letter **No. AD(EIA)/EPA/F-25(IEE)/2014/958**, dated **02-12-2024**. In light of the above, we kindly request to process and issue the necessary environmental approval for the proposed construction of the petroleum storage unit. The subject project includes storage Tanks of the Petroleum product i.e. IPA (DP), Acetic Acid (NDP), Ethyl Alcohol, Ethyl Acetate & Methanol. The Total capacity of the proposed Petroleum Storage Unit is 2,17,458 Liters. Total area of the proposed project is 3,367.71 Sq.m. The estimated cost of the project is Approx. 900 million rupees. The current Environmental Impact Assessment study has been conducted for the development of the DPL Storage.

The Proposed Project; i.e., Construction of Petroleum Storage Unit falls under Schedule-II, Category A (Energy), Clause 5 "Oil and gas extraction projects including exploration, production, gathering systems, separation and storage, under Punjab Environmental Protection (Review of EIA/IEE) Regulations,2022. TORs of the study under clause 5 (f) of policy and procedure for the filing, review, and approval of environmental assessment are attached as **Annexure-A** with this EIA report.

OBJECTIVES OF THE PROJECT

Objectives of the operation of the subject project is:

- To support expanding market reach by supplying DPL to a wider customer base, including residential and commercial users.
- To establish the business for the proponent.
- To contribute to the national economy of the country.
- Compensate to help poverty by providing employment

LOCATION AND SITE LAYOUT OF THE PROJECT:

Project site is located at Plot no 299 Sundar Industrial Estate, Sundar Raiwind Road Lahore.

Land coordinates of the project site are given below:

- **31°16'29 55"N**
- **74°10'29 64"E**

North…….. Open Plot

South…… . Open Plot

East…… Open Plot

West…… Access Road

For further details layout map of the project, Google earth map of the project site indicating its distances from nearby residential, commercial and industrial areas on A3 page is attached as **Annexure** with the report.

LAND USE ON SITE

Nature of the area is agricultural; Site selected for the subject project is a open plot within the already established unit and it is the property of the proponent.

ROAD ACCESS

- Main access road present at the front side of the project site connect it directly to Project Site.

VEGETATION FEATURES OF THE SITE

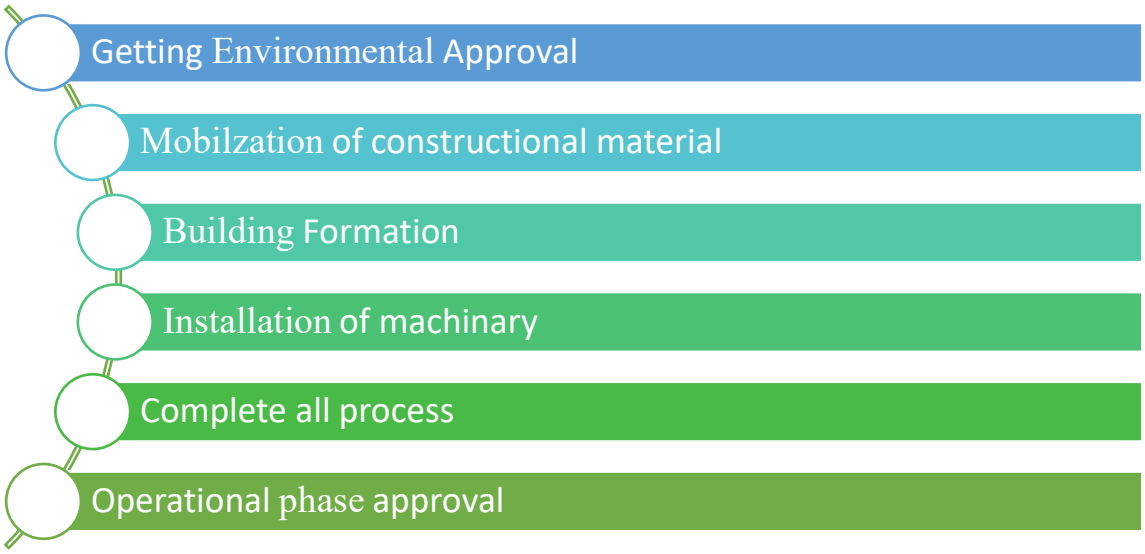
Land proposed for the subject project is clear and free of dense vegetation, only shrubs like *Parthenium* and grasses are present over there in scattered quantity. Few and scattered amount of vegetation will help to avoid land clearing at the project site.

COST AND MAGNITUDE OF THE OPERATION

Subject project is the Construction of Petroleum Storage Unit in already existing premises of the Unit. Total cost of the project will be Approx. 900 million rupees. The subject project includes storage Tanks of the Petroleum product i.e. IPA (DP), Acetic Acid (NDP), Ethyl Alcohol, Ethyl Acetate & Methanol. The Total capacity of the proposed Petroleum Storage Unit is 2,17,458 Liters. Total area of the proposed project is 3,367.71 Sq.m. The estimated cost of the project is Approx. 900 million rupees. There are no other associated activities with regard to the subject project.

SCHEDULE OF IMPLEMENTATION

The Project Site is the construction of Petroleum Storage Unit in the already existing premises of the Unit under the name of M/S Walchem Industries Pvt Ltd. Detailed feasibility studies and designing of the project have been completed. Necessary legal, administrative and financial formalities are being finalized. The project is expected to be completed within 10-12 months from the date of environmental approval. Subsequently the operational and maintenance aspects of the project will be undertaken by the proponent.



DESCRIPTION OF THE PROJECT:

The said project is construction of Petroleum Storage Unit which is constructed in an already established Unit premises under the name of M/s Walchem Industries Pvt Ltd. It is located at Plot no 299 Sundar Industrial Estate, Sundar Raiwind Road Lahore. M/s Walchem Industries (Pvt.) Ltd is an already operational unit that has already been granted a No Objection Certificate (NOC) by your esteemed office vide letter No. AD(EIA)/EPA/F-25(IEE)/2014/958, dated 02-12-2024. In light of the above, we kindly request to process and issue the necessary environmental approval for the proposed construction of the petroleum storage unit.

The total capacity of the proposed Petroleum Storage Unit is 2,17,458 Liters. Total area of the project is 3,367,71 SQ.M. The estimated cost of the project is Approx. 900 million rupees. The subject project includes storage Tanks of the Petroleum product i.e. IPA (DP), Acetic Acid (NDP), Ethyl Alcohol, Ethyle Acetate & Methanol. The Total capacity of the proposed Petroleum Storage Unit is 2,17,458 Liters. Total area of the proposed project is 3,367.71 Sq.m. The estimated cost of the project is Approx. 900 million rupees. There are no other associated activities with regard to the subject project. As the water will not be used in the project process and also there will not be any kind of gaseous emissions from the project related activity.

POWER REQUIREMENTS:

The process will be done with automatic running machines. And machines will be run with the electricity. Power requirements will be fulfilled by wapda.

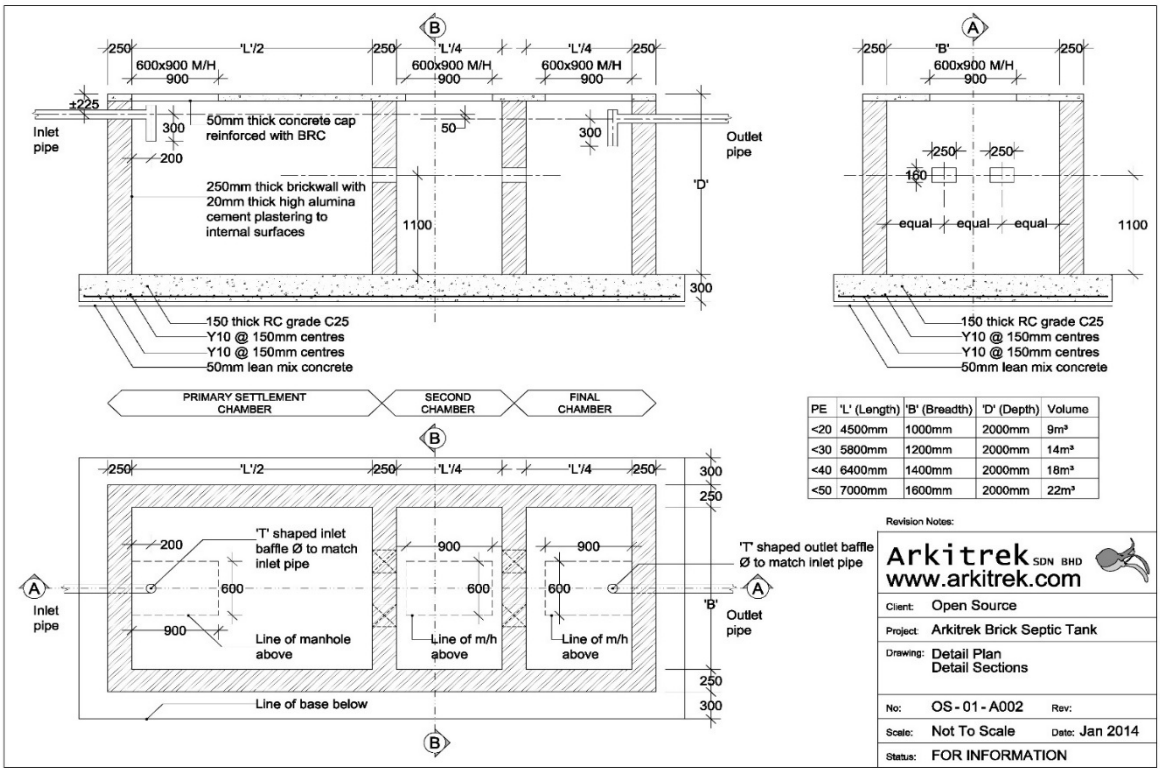
WATER REQUIREMENTS:

During Construction: approximately 5,000 gallon per day for constructional and domestic uses.

During Operation: maximum 10,000 gallons/d for domestic. Ground water will be used as a source of water to fulfill the water requirements during the construction and operation phases of the project.

WASTE WATER TREATMENT:

60-70% of the used water for domestic purposes will be the waste water which will be produced during the operation phase of the project. The generated wastewater will be treated in treatment facility (Septic Tank) of unit. Water after treatment will be disposed of in the nearby drain.



SOLID WASTE:

During the construction phase of the project, 75 kg/day construction and domestic waste will be produced. Constructional waste will be recycled during the constructional activities for road filling and maintenance purposes. According to an estimate, 11.000 kg/day domestic and project related solid waste will be produced during the operation phase of the project (based

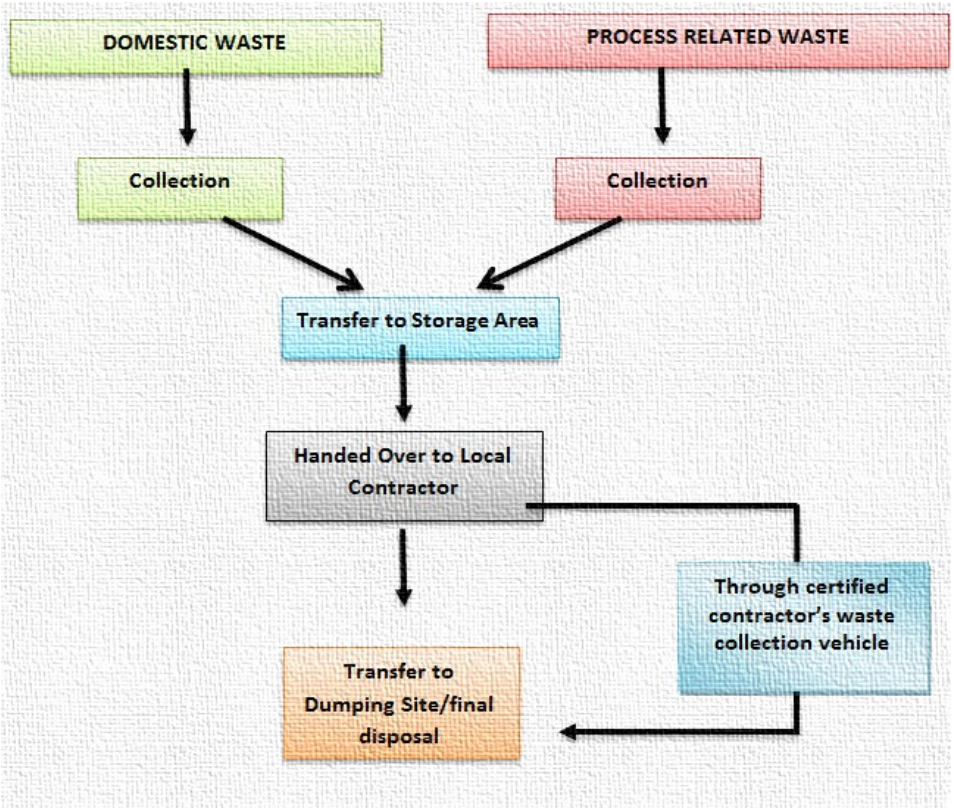
on solid waste generation rates of 0.45 kg/capita/day urban waste generation). In an DPL storage and filling plant, solid waste generation is relatively low compared to other industrial facilities, but there are still some specific sources of solid waste. These wastes typically arise from maintenance activities, packaging materials, and used components. Project related waste will include DPL cylinders become damaged, corroded, or fail safety inspections. These cylinders are either repaired, recycled. Scrap metal (valves), rubber, and plastic (seals and gaskets) which will be handed over to the certified contractors.

SOLID WASTE MANAGEMENT SYSTEM/PRACTICES

The Solid waste will be managed in proper way by following operations:

1. Placement of separate waste bins for domestic and project related waste in all working halls and designated points.
2. Collection of waste from all the working halls at one designated point by the sanitary workers on daily basis.
3. Collected waste will be handed over to the solid waste contractors for its final disposal, from this point.

FLOW CHART OF SOLID WASTE MANAGEMENT PLAN:



PLANTATION

Area for plantation will be reserved within the premises of the project and plantation will be done within, outside and at the boundary wall of the unit.

OCCUPATIONAL HEALTH AND SAFETY:

All the methods and procedures of health and safety will be adopted at the project site to ensure the health and safety of the workers.

FIRST AID FACILITY:

Proper medical facilities and proper training about first aid will be provided to workers of the subject project to cope with any accidents.

POWER SOURCES AND TRANSMISSION:

The power requirements will be fulfilled by WAPDA. However, a diesel fired stand by generator (if needed) will also be used for emergency situations only.

Following measures will be ensured for the operational equipment maintenance:

- Operator training
- Technician training
- Scheduled maintenance
- Regular oil analysis
- Repairs

PERSONAL PROTECTIVE EQUIPMENT:

PPEs will be provided to the workers during the working hours to ensure personnel health and safety and their implementation will also be ensured. Details of PPEs required for different occupational hazards are given below:

SAFETY SIGNS/SAFETY BOARDS:

At any workplace safety signs and symbols are very important to avoid many accidents. They must be in easy and understandable language to all the workers. Workers should have the knowledge of sign wordings and they must be trained and aware about them. Safety signs, symbols and boards will be provided at the proposed project site to protect the workers and employees from the risks of hazards that has not been controlled by other means. Safety signs and boards give safety message and they must be of different colors that workers could

understand their meanings easily. At the subject project, safety signs and boards will be placed to avoid the workers and staff from any risk.

Protection	Occupational Hazards	PPEs
Head Protection	Falling objects, inadequate height clearance, and overhead power cords	Helmets with or without electrical protection
Hand protection	Hazardous material, cuts or lacerations, vibrations, extreme temperatures	Synthetic or Rubber gloves, leather, insulating material etc.
Hearing protection	Noise, ultra sound	Hearing protectors like ear plugs, ear muffs
Respiratory protection	Dust, fogs, fumes, gases, smokes, vapors, oxygen deficiency	Facemasks or air supply
Body protection	Extreme temperatures, hazardous materials, biological agents, cutting and laceration	Aprons, insulating clothing etc. of appropriate materials

SECURITY:

Security guards will present round the clock to maintain its security. Beside this security cameras at various places will be installed.

EMERGENCY EVACUATION PLAN:

Emergency preparedness and evacuation plan will be formulated and adopted for the individual industries.

POWER SOURCES AND TRANSMISSION:

Electricity requirements at the project site will be fulfilled by WAPDA.

RESTORATION / REHABILITATION PLAN

All possible precautions will be taken to prevent an untoward incident in terms of life and property losses. The demolition materials will possibly be reused and recycled. All excavated surfaces will be termite proofed.

On completion of the project, the debris will be removed from the site in order to maintain aesthetics of the project. All measures will be undertaken for ensuring occupational safety, security and clean environment in the project area. Ornamental trees and flower plants will be planted on inside peripheral of the unit premises to restore the land.

CHAPTER # 4:

DESCRIPTION OF ENVIRONMENT

GENERAL

This chapter describes the baseline conditions, which cover the existing physical, ecological, and socio-economic environment of the Project Area as well as the Study Area. Information on these aspects has been derived from the desk study of available data, field visits to the Project/Study Area and information obtained through detailed consultation with the Government departments and other agencies.

TOPOGRAPHY

The geography of Lahore comprises the various features relating to the land and climate of Lahore, Pakistan. Lying between 31°15′—31°45′ N and 74°01′—74°39′ E, Lahore is bounded on the north and west by the Sheikhupura District, on the east by Wagah, and on the south by Kasur District. The Ravi River flows on the northern side of Lahore. Lahore city covers a total land area of 1014 km² and is still growing.

The topography of the site is almost flat and slopes upward gently from north to south i.e. moving upwards when reaching the canal and vice versa.

Lahore is the capital of Pakistan's largest province, Punjab; with a population exceeding 10 million, it is a megacity and ranked as the country's second largest metropolis (after Karachi). Collectively, it is also the fifth largest city in South Asia and the 26th largest city in the world in terms of population. As a major urban centre of Pakistan, it was graded in 2008 as a city with high sufficiency to become a Gamma world city.

LAND USE CHARACTERISTICS

The land use of the Project Area is mainly industrial as it is industrial estate. Also, it is surrounded by industrial area.

GEOLOGY

The agro-ecological zones of the country are presented in Exhibit-5.1. The project site falls under Zone-IV (b); the zone generally comprises sandy loam, and clayey loam.

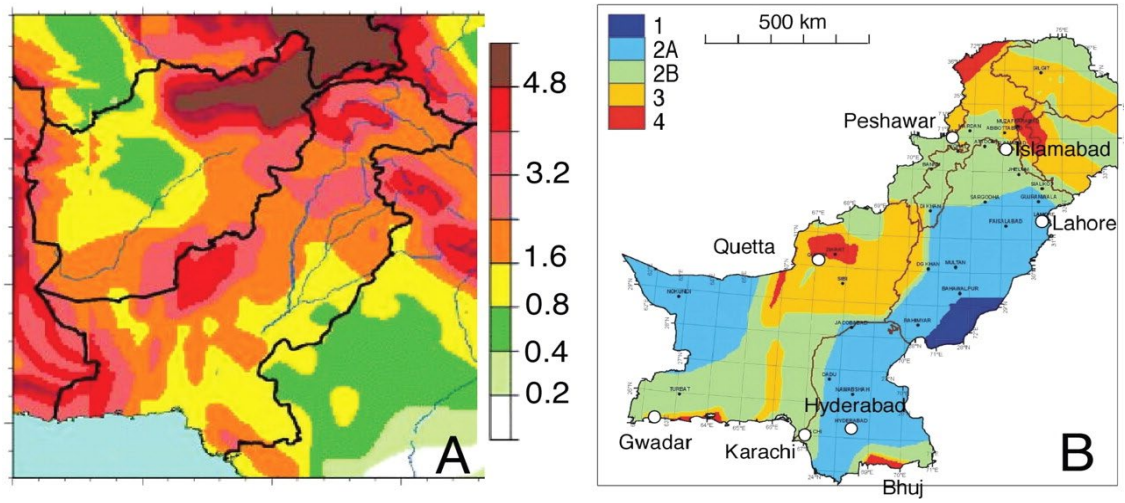


Figure 0-1: Seismic Zones of Pakistan (Geological Survey of Pakistan)

SOIL

Lahore plains are most probably underlain by the Potwar stratigraphy, but it would be deeply eroded. The geotechnical properties and mineralogical composition of the soil, das established during various studies / boring of tube wells for water supply by WASA/LDA confirm that the Lahore soil is composed of silty clay. The major mineral composition for Lahore soil is Quartz, Muscovite and Clinochlore, which shows that the alluvial deposit received sediments from metamorphic origin.

In general, subsurface stratigraphy at the site consists of three basic lithological units as given below:

- Lean Clay/Silty Clay
- Sandy Silt/Silt
- Silty fine Sand/fine Sand

These soils are the alluvial deposits of the recent geologic times. The subsurface stratigraphy is as discussed below:

- The first soil unit of brown silty clay/lean clay forms the topsoil cover at the site at all the locations and generally continues to a depth of 1 .0 m-3.5m below top of ground. This stratum contains trace fine sand and trace to little concretions at places. It is present in a soft to a stiff state of consistency and has low to medium plasticity.

- The second soil unit of brownish grey sandy silt/silt underlies the upper silty clay/ lean clay stratum. This layer has a thickness of 1.0 to 3.0m and is present in a firm state.

- The third soil unit of brownish grey non-plastic fine silty sand underlies the silt/silty sand stratum. It is present in a loose to medium-dense state.

The lithological distribution of soils consists of slightly cohesive, generally firm to stiff silty clay lean clay from 1.0 to 3.5m depth, followed by firm to stiff sandy silt/silt of 1.0 to 3.0m thickness in turn followed by medium dense silty fine sand. Groundwater is present at a depth of 4.5 to 5.0m below top of ground.

The subsurface generally appears suitable for supporting light to medium loads through spread foundations placed at 1.0 to 2.0m depth. Besides, some isolated weak spots are also expected, which will require special measures to be adopted

SURFACE WATER RIVERS

No rivers exist in the vicinity; however, storm water drains cross the route for disposal into the Ravi River. Water from River Ravi, flowing on the northwestern side of the city of Lahore, is being used for other purposes other than drinking purposes. River Ravi receives almost all the municipal/ industrial wastes from the city of Lahore. The potential value as a recreational water body and breeding place for fish is threatened by the municipal and industrial pollution.

CLIMATE

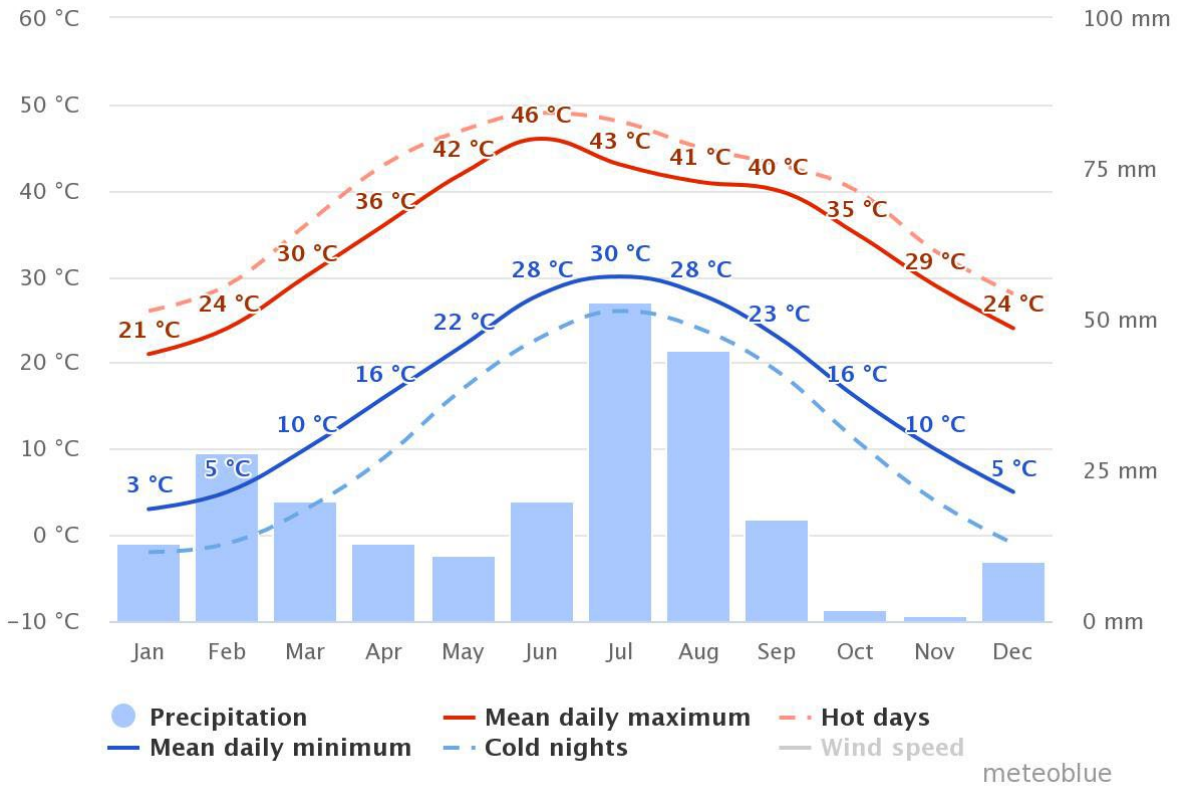


Figure 0-2: Lahore Climate Date (Source meteoblue)

RAINFALL:

Most of the rainfall occurs in the months of July, August and September, although some winter rain also occurs. The rainfall decreases as one goes from the Eastern and Northern part of the district, westwards. The average rainfall is about 30.4 centimeters but in 1960 the total recorded was 38.1 centimeters. There is a tendency for the rainfall to increase with the expansion of cultivation and vegetation. The winter rain falls mostly in January and February

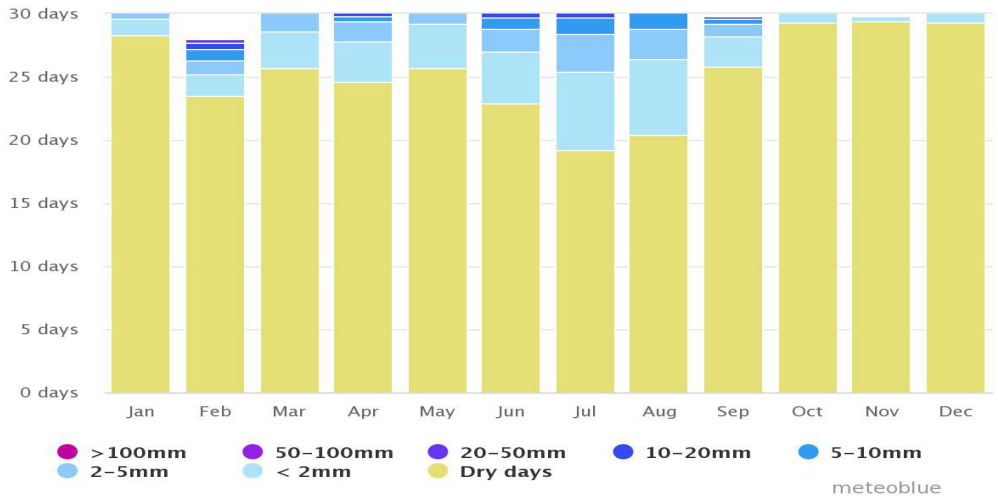


Figure 0-3: Rainfall Data (Source metoblue)

WIND: Given below are the graphs for wind speeds patterns and trends distribution through the years for Lahore.

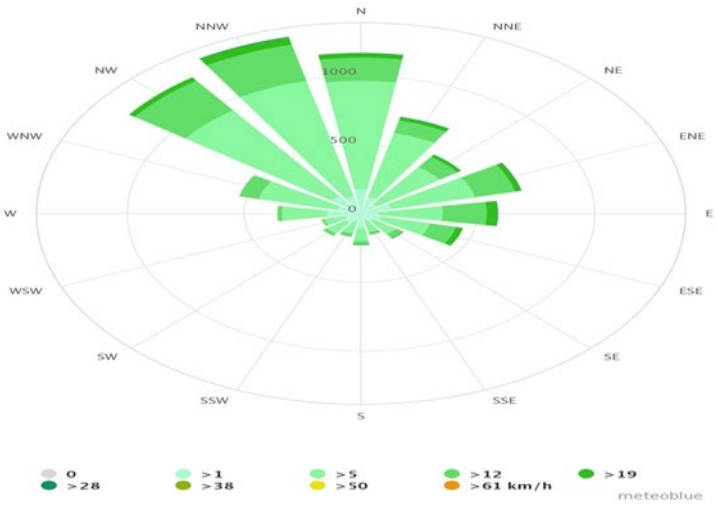


Figure 0-4: Lahore Wind Speed (Source: www.meteoblue.com)

WATER RESOURCES

GROUND WATER

Ground water quality is fresh (defined as acceptable in terms of its salinity). Raw water abstracted from the deep tube wells is believed to be essentially bacteria free. The water quality in the upper 50 meters zone of subsoil is generally brackish.

For city's drinking purposes water is abstracted from groundwater aquifer by means of tube wells located throughout the city. The quality of water is generally adequate for direct consumption. About 83% of city population is consuming groundwater for drinking purposes.

Groundwater is available at a depth ranging between 15 to 23m below the natural surface level. Deep groundwater from a depth of about 210m in the vicinity of the Project Area is being extracted for meeting the domestic and commercial water demands in nearby areas.

Adequate quantity of good quality groundwater is available below a depth of 50m. Water consumption varies significantly and its variation as of industrial units. Usual water consumption pattern for industrial units and data collected from the prospective industrialist will form basis for total water demand.

ECOLOGICAL ENVIRONMENT

FLORA: Lahore, the city of gardens is heart of Pakistan. The city has seen the heydays of the Mughals, Sikhs and the British; all left their footprints on the history and cultural mosaic of the city. Resultantly Lahore is a treasure-trove of monuments, historical relics and remains which these nations have left in this historical metropolis of Punjab.

Though an ancient city; over the years Lahore has considerably expanded. However, along these modern additions, the ancient monuments, old gardens, trees, graveyards and traditional bungalows having attached gardens, large expanses of lawn and old roadside trees some of them can still be seen, are gradually disappearing. These green areas and old endemic trees of Lahore are home to many resident bird species as well as many summer, winter and transit migrants. So, Lahore is also very important due to its ecological conditions.

FAUNA: Common birds found in the area are crows and sparrows. Domestic animals are seen grazing in the agricultural land as well as on the project site. Chirping birds are having their nests at the well grown trees that are providing a natural habitat for the birds. Some squirrels, parrot, rats, weaver, sparrows are also found in the area.

Different species of reptile and amphibians such as lizards and frogs are also found. Various bird species known to occur in the area include myna, bulbul, crow and sparrow.

SOCIO-ECONOMIC AND CULTURAL FEATURES

POPULATION COMMUNITIES AND EMPLOYMENT

Lahore has experienced a rapid increase in population due to rural-urban migration. Unplanned urban growth has been rampant, particularly in areas where basic infrastructure is available. Inadequate urban services especially sewerage, drainage and solid waste management have worsened quality of life and environmental conditions. Land use in the city centre is divided between commercial and residential. Concentrated commercial activity and its linear growth have created complex problems such as inadequate parking, poor accessibility due to encroachments on road footpaths, and presence of vendors/hawkers. Farming system is currently practised on a relatively much smaller scale from small and mini dams and tube-wells. The major grain-fed crops grown are wheat, gram, groundnut, millets, sorghum, oilseeds, fodder. Maize and sunflower are grown on higher rainfall areas. Vegetables and orchards are grown where access to cities and irrigation water from dams and tube-wells are available.

EDUCATION

Punjabi and Saraiki are most spoken languages in Lahore district followed by some Urdu speaking and very few people speak Pashtu. There is a school present near to the proposed site.

QUALITY OF LIFE VALUES

PUBLIC HEALTH

There is no Basic Health unit in the nearby areas but there are a few private hospitals and clinics are located in Lahore and people take their patients for treatment there.

ENVIRONMENTAL PARAMETERS FOR MONITORING

The environmental monitoring of parameters like ambient air quality, noise level and groundwater help us to analyze the prevailing environment conditions in and around the study area, and to protect it from any adverse activities due to the proposed Project implementation.

AIR QUALITY

The environmental monitoring is conducted by EPA certified laboratory ESPAK and detailed results of ambient air quality monitoring have been also attached as **Annexure**.

NOISE LEVEL

The environmental monitoring is conducted by EPA certified laboratory ESPAK and detailed results of ambient air quality monitoring have been also attached as **Annexure**.

DRINKING / GROUND WATER QUALITY

The environmental monitoring is conducted by EPA certified laboratory ESPAK and detailed results of ambient air quality monitoring have been also attached as **Annexure.**

CHAPTER # 5

SCREENING OF POTENTIAL ENVIRONMENTAL IMPACTS & THEIR MITIGATION MEASURES

The following chapter describes the overall possible impacts of project on the physical, biological and socioeconomic environment because of operation phases and mitigation measures to minimize the significance of the possible impacts up to an acceptable level. The anticipated impacts related to project location, design, operational phases have been assessed and mitigation measures are provided accordingly.

IDENTIFICATION OF ALL IMPACTS:

All the impacts related to the subject project due to the project location, during the operational phase have been identified and their mitigation measures have been suggested in Chapter # 4, Screening of potential environmental impacts and mitigation measures.

METHODOLOGIES FOR IMPACT IDENTIFICATION:

The methodology adopted for impact evaluation includes the Project Impact Evaluation Matrix.

PROJECT IMPACT EVALUATION MATRIX

The impact Evaluation matrix was developed by placing project activities on x-axis and different environmental parameters likely to be affected by the project actions grouped into categories i.e. Physical, Biological and Socio-Economic Environment. For the impact assessment, project impact assessment matrix is used by dividing the project action into different phases operation phase. A project impact evaluation matrix is attached in next section of this chapter.

The evaluation of impacts has been carried out on the basis of developing matrix, in which impacts have been rated on the basis of their significance. For rating impacts significance following criterion has been developed;

NA – Not Available

O – Insignificant (No or minimal impact)

LA – Low Adverse (Short term, reversible or less damage to environment)

MA- Medium Adverse (Long term reversible damage to environment)

HA – High Adverse (severe irreversible adverse damage to the environment)

LB – Low Beneficial (Short term benefits or less beneficial to the environment)

MB – Medium Beneficial (Long term benefits to environment)

HB – High Beneficial (Continuous benefits to environment)

	Physical Environment							**Biological Environment**		**Socio-Economic Environment**							
Environmental Component / **Project Activities**	Topography & Drainage	Soil Quality	Landscape	Surface water quality	Ground water quality	Air quality	Noise	Flora	Fauna	Agricultural Land	Health & Safety	Disruption of Public Utilities	Employment	Population Disturbance	Social Disorder	Cultural Values	Traffic Management
Transportation of raw material/ products	MA	MA	MA	MA	O	MA	HA	LA	MA	O	HA	LA	B	MA	LA	O	HA
Production process	O	O	O	HA	MA	MA	MA	O	O	O	HA	HA	HB	O	O	LA	O
Washing process	O	O	O	LA	HA	O	O	LA	LA	LA	LA	HA	B	O	O	O	O
Operation of boilers	O	O	O	LA	HA	MA	MA	O	O	O	HA	HA	HB	O	O	O	O
Operation of generators	O	O	O	O	LA	HA	MA	O	O	O	HA	LA	HB	O	O	O	O
Water consumption	LA	O	LA	HA	HA	O	O	LA	LA	LA	LA	HA	B	LA	O	O	O
Wastewater generation	HA	MA	MA	MA	MA	LA	O	MA	MA	MA	HA	LA	B	LA	LA	O	O
Storage of raw materials	O	O	O	O	O	O	O	O	O	O	LA	O	B	O	O	O	O
Social activities	O	O	LB	B	B	B	B	B	B	HB	HB	B	HB	HB	HB	HB	O
Public welfare	O	O	B	B	B	B	B	B	B	HB	HB	HB	HB	HB	HB	HB	LB

Economic activities	LB	O	B	B	B	B	B	B	B	B	HB	B	B	B	B	B	LB
Employment	O	O	O	O	O	O	O	O	O	O	B	B	HB	B	B	B	LB
Infrastructure improvement	LB	MB	HB	B	B	B	B	HB	LB	HB	HB	B	HB	B	B	B	B

Legend:

O=Negligible/No impacts B=Beneficial LA=Low Adverse
MA=Medium Adverse HA=High Adverse

IMPACT ANALYSIS AND PREDICTION:

In order to evaluate the socioeconomic and environmental impacts, filed surveys are extremely essential. In addition to the surveys at the preliminary stage, consultation with the community and their active participation plays a vital role in successful implementation of the project. For the impact analysis and predictions following methods were adopted:

CONSULTATIONS/ CASE STUDIES:

To study the impacts of the project on physical and biological environment, site visits were conducted by the environmental practitioners and experts and possible physical and biological impacts which may arise due to the subject project were identified through consultations and case studies and their mitigation measures were suggested accordingly.

MEETINGS:

For the identification of the social impacts of the project, meetings and group discussions were held with the local people, stakeholders, nearby residents and passerby because social acceptability of the project and the area is a key to success. Consultation with the stakeholders is a tool for managing two-way communication between the project proponent and the affected public. Its goal is to improve decision making and built understanding by actively involving individuals, groups and organizations, which have stake in the project. This involvement increases project's long-term viability and enhances its benefits to locally affected people and other stakeholders.

To identity the different types of stakeholders and ascertain their perceptions about the project, an Environmental Impact Assessment was conducted. Informal group discussions were also held as an additional tool for obtaining feedback from the stakeholders that are being discussed in the following.

The EIA team carried out public consultations at various locations around the Project Site. The stakeholder's consultation during this phase of the work targeted the project area, administrative and private offices, Govt. offices, shops, etc. near the Project area:

- Selection of the stakeholders for consultation, reconnaissance of the project site and initial discussions with the neighboring factory workers, villagers, shopkeepers, drivers etc.
- Environmental consultants and social specialists and documenting the opinions of the stakeholders expressed during the meetings etc.

CHARACTERISTICS OF IMPACTS

Following impacts related to the location of the industrial unit should be identified to avoid the sitting of the industrial estate in sensitive, difficult or unsafe area:

IMPACT:

DISPLACEMENT OF EXISTING LAND USE AND OTHER RESOURCES:

IMPACT ASSESSMENT CRITERIA

The impacts were assessed in the light of criteria given as under: -

- Magnitude or degree of impact
- Time and duration of impact
- Likelihood of impact occurrence
- Sensitivity of impact
- Risk related to impact.

POTENTIAL POSITIVE IMPACTS

The project is envisaged to have followed major positive impacts;

EMPLOYMENT OPPORTUNITIES:

Construction of proposed Petroleum Storage unit is in already existing Premises of M/s Walchem Industries Pvt Ltd will help in generating new jobs for the local population. The requirement of Managers, Engineers, Workers, technicians, skilled and unskilled labor etc. will generate employment opportunities. It is estimated about 25-30 persons will be employed during operational phase and about 18-20 persons will work during construction phase. Hence, there is large number of employment opportunities especially for the locals of the district.

INCREASE IN BUSINESS:

With the influx of labourers for the proposed project, there will be more opportunities for small scale business such as small food cafes etc.

IMPROVED INFRASTRUCTURE:

M/s Walchem Industries Pvt Ltd will improve the infrastructure of the area as proponent has incorporated aesthetic values and regeneration of site in its planning stage.

ECONOMIC BENEFITS:

M/s Walchem Industries Pvt Ltd is a major's working entity in the country; it is a great investment for the economy of our country. In the long run it will positively impact not only the local population but also the economy of Pakistan.

POTENTIAL NEGATIVE IMPACTS:

TYPES OF NEGATIVE IMPACTS MINOR IMPACTS

These are of minor intensity. For mitigation of the minor impacts routine and limited actions are required.

MODERATE IMPACTS

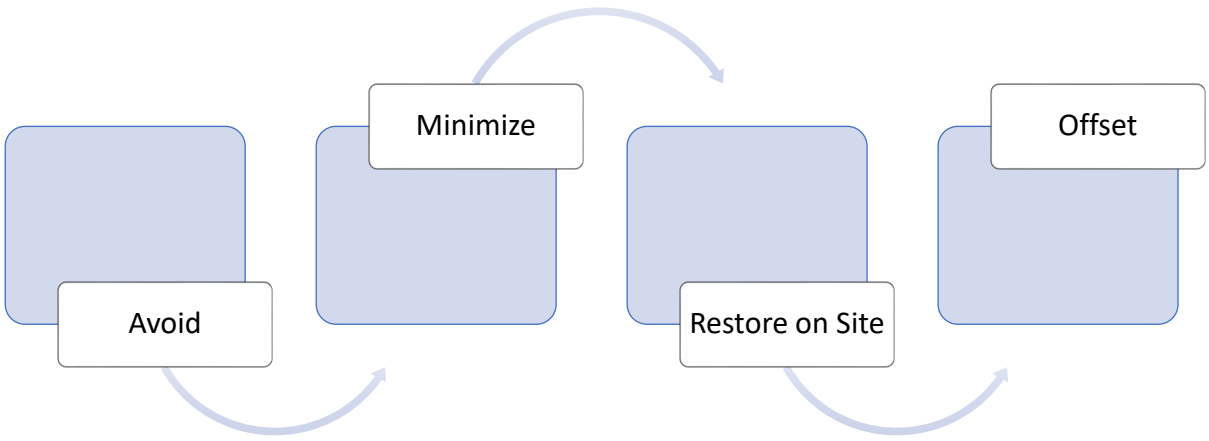
These impacts need specific and additional mitigation measures.

MAJOR IMPACTS

These impacts have severe adverse impact. These are intolerable. All possible preventive and multiple control measures are adopted to minimize their intensity and duration.

MITIGATION ASSESSMENT CRITERIA:

The Mitigation Hierarchy establishes a structure to guide development and application of measures to mitigate impacts on environmental values and associated components. The term "mitigation" applies to four steps, or levels, in the mitigation hierarchy:



GENERAL PRINCIPLES

- Maintaining the integrity and natural functions and processes of ecosystems, and the resilience of ecosystems, is prerequisite to sustainable use of natural resources, and essential to maintaining ecosystem goods and services over time.
- The mitigation hierarchy is applied in order of priority as follows: a. Avoid b. Minimize c. Restore On-Site d. Offset (Off-Site or On-Site).
- Generally, the "higher" the priority of the environmental value and associated component, the more protective the mitigation measures.
- For an action or measure to be considered "mitigation", a party must accept responsibility for implementation of appropriate mitigation measures, and there must be certainty that the mitigation measures will be carried out.
- Implementing mitigation measures can help resolve issues that may delay or prevent a proposed project or activity.

GENERAL CONSIDERATIONS

- Which environmental values and associated components will be impacted by the proposed project or activity? (This will be determined from the output of the environmental impact assessment, i.e., the Environmental Impact Assessment and Mitigation Plan)
- Have the criteria been used to determine relative priorities among environmental values and associated components?
- Have mitigation measures for impacts on environmental values and associated components, at all scales, been considered?
- What is the current condition of each environmental value and associated component actually present within the footprint and area of influence of the proposed project or activity?
- Can impacts on one or more environmental values or associated components be more fully mitigated than impacts on other environmental values and associated components?
- Are there multiple environmental values and associated components with conflicting management needs and potential conflicts that need to be considered?
- Is sound guidance available and being used, e.g., are best management practices (BMPs) and guidelines available for affected environmental values and associated components?

- Is there opportunity to collaborate with other proponents that may have interest in overlapping mitigation measures?

IMPACT SIGNIFICANCE

ECOLOGICAL IMPORTANCE NATURAL VEGETATION

Project activities do not impose any potential impact on the area's natural vegetation and plantation.

ASSESSMENT OF IMPACT: A significant impact will be interpreted if unnecessary or excessive removal and burning of plants for fuel wood is observed. In case of subject project, no tree cutting will be required for the construction of the subject project.

Nature of impact: Direct

Duration: long term

Timing: construction phase

Reversibility: irreversible

Likelihood: moderate

Consequences: Mild, as no rare plant species are not present in the project area.

Impact significance: significant

MITIGATION MEASURES:

The following mitigation measures will reduce any impact on vegetation:

o Do not park vehicles on green belts/ grass

o Unnecessary damage to vegetation will strictly be avoided.

o Proponent will plant trees and other species after construction phase

RESIDUAL IMPACT: Given the current state of the vegetation, and proper implementation of the proposed mitigation measures, slightly significant residual impact on the natural vegetation of the area is anticipated.

FAUNA

The fauna including wildlife species do not exist at the project site**.**

Nature of impact: Direct

Duration: short term

Timing: construction phase

Reversibility: not applicable

Likelihood: low

Consequences: Nil, as no rare plant species are not present in the areas.

Impact significance: not significant

Residual Impact: Given the current state of the fauna there is no significant residual impact on the wild life of the area.

SOCIAL IMPORTANCE

Following parameters were adapted for the assessment of the well-being of the poor people near the project site that are used to assess the social, economic, and cultural impacts of the project.

INCONVENIENCE DUE TO CONSTRUCTION VEHICLES:

During the construction period a minor impact may be the movement of vehicles from the main road to the proposed plant boundary; it may affect the traffic on other roads and may cause minor annoyances to the residents and other industrialists of the area. The transportation of heavy materials and equipment is likely to damage the existing roads if they were used for the transportation of heavy machinery.

MITIGATION MEASURES:

Efforts should also be made to discuss traffic conditions so that regular traffic is not disturbed. Transporters engaged for the project would be forced to adhere to the load specifications of the access road. No overloading would be allowed in any case.

Nature of impact: Direct

Duration: Short term

Timing: construction phase

Reversibility: reversible

Likelihood: low

Consequences: low, as it links the main Raiwind Road and vehicles will rarely use the sub roads.

Impact significance: slightly significant

CULTURAL ISSUES

Induction of outside workers in the Contractor's labor may cause cultural issues with the local community as the local community is very sensitive about their cultural values. Also, theft problems to the local community may arise by the labor force and vice versa.

MITIGATION MEASURES:

Good relations with the local communities will be promoted by encouraging contractor to provide opportunities for skilled and unskilled employment to the locals, as well as on-the-job training in construction for young people. Project manager will restrict his staff to mix with the locals to avoid any social problem. Contractor will keep the copies of Computerized National Identity Cards (CNIC) of his workers and will warn them not to involve in any theft activities. And if anyone would involve, he will have to pay heavy penalty. Similarly, at the time of employment contractor has to take care that the workers should be of good repute. The contractor camp will be properly fenced and main gate will be locked at night with a security guard to check the theft issues. Contractor will also be the responsible for the sensitivity towards the local customs and traditions.

Nature of impact: Direct

Duration: Short term

Timing: construction phase

Reversibility: reversible

Likelihood: low

Consequences: low, if project proponent implements mitigation measure, its impact will be low

Impact significance: slightly significant

ACCIDENT RISKS

Unmonitored construction activities may create an accident risk for the local residents particularly children and labor force.

MITIGATION MEASURES:

Contractor must have first aid kits along with the medical officer in the field if a minor injury takes place, but for an unfortunate accident service of nearby hospitals will be availed. Routine medical check-ups of all the field staff including unskilled labor need to be

conducted by a qualified doctor. Training of the workers should be arranged regarding safety procedures, environmental awareness, equipping all construction workers with PPEs, safety boots, safety helmets, ear plugs, gloves and protective masks. Monitoring must be carried out to check for the sustainable use of PPEs.

Nature of impact: Direct

Duration: Short term

Timing: construction phase

Reversibility: not applicable

Likelihood: moderate

Consequences: moderate, as complete trainings and mitigation measure have been planned.

Impact significance: significant

PRIVACY ISSUES

Disturbance may happen to the privacy of women residing in the work area when workers will work at height.

MITIGATION MEASURES:

Contractor must take care for the privacy of residents, especially women near the working area.

Nature of impact: Direct

Duration: Short term

Timing: construction phase

Reversibility: reversible

Likelihood: low Consequences**:** low, as contractor will take care of the matte

Impact significance: slightly significant

SHARING OF RESOURCES:

During the construction and operational phase of the project, workers will share the common resources like potable water, fuel, wood. It may create conflicts between work force and local population.

MITIGATION MEASURES:

The contractor will be required to maintain a close friendly relationship with the local communities to ensure that there may not be any conflict related to common resources utilization. He must get permission of the local population before using their common sources of water and other resources.

Nature of impact: Direct

Duration: Short term

Timing: construction phase

Reversibility: reversible

Likelihood: low

Consequences: low, it the terms & conditions will be followed and mitigation measures have been employed

Impact significance: significant

NOISE PROBLEMS

Residents of the area and neighbours may face the problems of noise during the construction and operations phase.

MITIGATION MEASURES:

Large noise generating activities should be carried out in fixed hours. The timing will be known to all the people in 500 m radius of the site.

Nature of impact: Direct

Duration: Short term

Timing: construction phase

Reversibility: reversible

Likelihood: Moderate

Consequences: Moderate, project contractor will follow the safety guidelines & NEQS

Impact significance: significant

MOBILIZATION ISSUES

During the construction phase, the general mobility of the local residents and their livestock in and around the study area is likely to be hindered.

MITIGATION MEASURES:

It will be the responsibility of project contractor and drivers to follow the speed limits in the area.

Nature of impact: Direct

Duration: Short term

Timing: construction phase

Reversibility: reversible

Likelihood: low

Consequences: low, as it links the main Raiwind Road and vehicles will rarely use the sub roads

Impact significance: slightly significant

HEALTH

People from the project area regularly travel to other cities, and thus cannot be considered isolated from the rest of the country. They are regularly exposed to illnesses common to urban populations, and have similar levels of immunity. The project is therefore very unlikely to lead to an epidemic of any sort among local communities.

MITIGATION MEASURES:

Regular medical check-ups of all the workers need to be conducted to ensure the health of workers and local population.

Nature of impact: Indirect

Duration: Long term

Timing: construction / operation phase

Reversibility: reversible

Likelihood: moderate

Consequences: low to moderate, it may cause disturbance or spread of disease in the area if mitigation measure will not follow

Impact significance: significant

SAFETY:

Project activities could become a hazard as it is located in populated area local people, especially children, are likely to gather around to watch the activity. The other safety issue is that of traffic, especially along access roads close to settlements.

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

- Local people will be informed in advance when work is about to start in an area.
- This may result in people keeping young children away from work areas.
- Machinery will never be left unattended.
- Safe driving practices will be adopted, particularly while passing through settlements.

Nature of impact: Direct

Duration: long term

Timing: construction / operation phase

Reversibility: irreversible

Likelihood: moderate to high

Consequences: moderate if all safety measure will be taken care

Impact significance: Significant

ENVIRONMENTAL STANDARDS TOPOGRAPHY:

The project will not change the topography of the area as proponent committed to sustainable development of the proposed project. The infrastructure of the area will be maintained after the construction activities.

Residual Impact: The residual impact of project activities on the topography of the area is expected to be insignificant. The residual effects are summarized below:

Nature of impact: direct

Timing: construction Phase

Duration: during construction activities

Likelihood: Nil

Consequences: no change

Impact significance: Not significant

MITIGATION MEASURES:

The project design should include measures to maintain the project landscape that matched the pre project natural green features achievable through extensive plantation. Project activities must be executed in a way it will not harm naturally available resources.

LAND ACQUISITION RESETTLEMENT

One of the major impacts includes acquisition of land from the land owners and the resulting displacement of their families and disturbances in the livelihood of the affected persons (AP) in the project area. But present project land is ownership of M/s Walchem Industries Pvt Ltd and do not involve any type of land acquisition and resettlement activity.

Residual Impact: The residual impact of project activities for the land acquisition & resettlement of the area is expected to be insignificant. The residual effects are summarized below:

Nature of impact: direct

Timing: Planning stage

Duration: not applicable

Likelihood: Nil

Consequences: no change

Impact significance: Not significant

Mitigation measures: If any resettlement involve, proponent must consult the affected persons and incorporate their interests and demands.

CHANGES IN LAND USE

The current land use of the area is mainly Industrial. Project is expected to increase land use value particularly near the main road creating easy economic and employment opportunities for locals.

Residual Impact: The residual impact of project activities on land use of the area is expected to be insignificant. The residual effects are summarized below:

Nature of impact: direct

Timing: construction phase

Duration: not applicable

Likelihood: Nil

Consequences: no change

Impact significance: Not significant

MITIGATION MEASURES: The impact of change in land use must incorporate in planning stage so that it may not cause any hindrance during the constructional phase.

SOLID WASTE/ SLUDGE MANAGEMENT:

Proper solid waste management system is necessary for the prompt, timely and efficient disposal of solid waste & sludge for the reduction of its impacts. Impacts due to solid waste & sludge are expected to be temporary and minor in nature.

Nature of impact: Direct

Duration: Short term

Timing: operation/ construction

Reversibility: Not applicable

Likelihood: Low (unlikely) as mitigation measures will ensure that Solid waste management will be efficient

Consequences: Mild, as it will be removed from site within few hours

Impact significance: Low, based upon low likelihood and mild to moderate consequence.

MITIGATION MEASURES:

- Planning of solid waste disposal sites with reasonable distance from the human settlements
- A minimum distance of 1 km should be maintained between the solid waste disposal site and nearest human settlement
- Devise plan & develop guidelines for the safe handling, storage & disposal of Sludge must not be placed at the site after cleaning of wastewater treatment tank
- PPEs are strongly recommended for workers for the handling of sludge

Residual Impact: After implementing the mitigation measures listed above, the residual impact of the solid waste/ sludge is expected to be insignificant.

AIR QUALITY POTENTIAL IMPACT:

Air emissions from project-related activities are likely to include:

- Dust raised on dirt tracks by project-related vehicles.

- Combustion products (nitrogen oxides, sulfur dioxide, particulate matter, carbon monoxide, and volatile organic compounds) from vehicles used for project-related activities

ASSESSMENT OF IMPACT

DUST EMISSIONS:

Dust emissions caused by vehicular traffic on dirt track are an important concern, primarily when such traffic passes near community settlements. Dust emissions cause the amount of particulate matter in the air to increase, and thus become a health concern. Dust clouds also reduce road visibility, creating a traffic hazard.

GASEOUS EMISSIONS

Emissions produced by vehicles and equipment will be similar to those produced by generators in terms of the resulting pollutants (SO_2, NO_X, PM, etc.). However, the extent to which they are produced will be kept considerably lower, since much smaller engines are used in vehicles and construction machinery.

Nature of impact: Direct

Duration: long term

Timing: operation/ construction

Reversibility: irreversible

Likelihood: moderate as mitigation measures will ensure that air pollution remains within acceptable limits.

Consequences: moderate, as pollutant levels in the ambient air will be well within acceptable limits.

Impact significance: moderate, based upon low likelihood and mild to moderate consequence.

MITIGATION MEASURES

- None of the potential effects discussed above are expected to exceed acceptable limits.
- The mitigation measures given below will further reduce their impact, and ensure that they remain within acceptable limits.

- All equipment and vehicles used during the project will be properly tuned and maintained in good working condition in order to minimize exhaust emissions.
- Vehicle speed will be reduced on track passing through or close to shops
- Imposing speed limits and encouraging more efficient journey management will reduce the dust emissions produced by vehicular traffic.
- Water will be sprinkled where necessary to contain dust emissions.
- Management will make sure process is environmentally friendly

Residual Impact: After implementing the mitigation measures listed above, the residual impact of the proposed activities on ambient air quality is expected to be low.

NOISE LEVEL

Noise may be a major concern during the construction/ operation phase. It can be generated from the machinery used for construction and operations. Generators are another source of noise pollution.

Nature of impact: Direct

Duration: long term

Timing: operation/ construction

Reversibility: Not applicable

Likelihood: moderate

Consequences: slightly significant, if above mentioned mitigation measure will be strictly followed

Impact significance: moderate, based upon low likelihood and mild to moderate consequence.

MITIGATION MEASURES:

- Keep the traffic load aligned and minimum during working hours of project.
- Machinery and vehicles must be well tuned and maintained. Impose the limits on unnecessary use of horns.
- Safety signs must be displayed and public & drivers must be well aware of them. Do not work in night time

Residual Impact: After implementing the mitigation measures listed above, the residual impact of the noise level will be slightly significant.

CONCLUSION

Management of M/s Walchem Industries Pvt Ltd has to achieve the following goals.

- Identification of regulatory requirements that apply to the project activities in the context of environmental protection.
- Identification of the environmental features of the project area and the likely impact of the project on the environment,
- Recommendation of appropriate mitigation measures that management will incorporate into the project implementation to minimize all adverse environmental impacts.

Baseline environmental and socioeconomic information collection from a variety of sources, including field surveys.

The impacts of project in area will be insignificant, provided the generic mitigation measures proposed in this report are implemented. After assessing the project activities and investigating the project area, it is concluded that, if the activities are undertaken in this report, and the recommended mitigation and environmental management measures are adopted, the project will not result in any long-term or significant impacts on the local community or the environment.

PURPOSE OF MITIGATION MEASURES

WHAT IS THE PROBLEM I.E. IN TERMS OF "MAJOR ENVIRONMENTAL IMPACTS" WHICH MAY ARISE BY THE SUBJECT PROJECT ACTIVITY?

The major impacts may arise by the subject project could be particulate matter & dust, noise, solid waste and wastewater. Other impacts are of minor importance. These impacts will arise during operation but precautionary measures will be adopted prior to start the activity, during the activity and post activity.

WHEN THE PROBLEM WILL OCCUR AND WHEN IT SHOULD BE ADDRESSED?

Any impact that would arise due to the subject project activity will be addressed on site. Trainings will be conducted on site prior to start work while other precautionary measures will also be adopted to make the project safe and environmentally friendly.

WHERE AND HOW THE PROBLEM SHOULD BE ADDRESSED?

HSE manager/environmental manager along with site manager will be appointed to assess any impact that could be arisen during both phases. He would be responsible to address the problem and to mitigate it.

WHYS OF ACHIEVING MITIGATION MEASURES

IMPROVED MONITORING AND MANAGEMENT PRACTICES:

Management of M/s Walchem Industries Pvt Ltd shall take appropriate measures to provide pollution free and safe environment during the project activity by implementing improved management practices and monitoring techniques suggested in EMP.

COMPENSATION IN MONEY TERMS:

M/s Walchem Industries Pvt Ltd will adopt such plan that will assure the minimum impact on the environment and health by implementing proper mitigation measures.

REPLACEMENT, RELOCATION AND REHABILITATION:

M/s Walchem Industries Pvt Ltd will develop Restoration/ reclamation or tree planation plan to restore the project area. Maximum Plantation will be done with native species within the building, along the boundary wall and along the road side if directed by EPA. Also, in-front of main area, horticulture plan will be formulated and area for this will be kept reserved.

CHAPTER # 6

ENVIRONMENTAL MANAGEMENT AND MONITORING PROGRAM

PURPOSE AND OBJECTIVES OF THE EMP:

The primary objectives of the EMP are to:

- Facilitate the implementation of the mitigation measures identified in the EIA.
- Define the responsibilities of the project proponent.
- Define a monitoring mechanism and identify monitoring parameters in order to:

1. Ensure the complete implementation of all mitigation measures.
2. Ensure the effectiveness of the mitigation measures.
3. Provide a mechanism for taking timely action in the face of unanticipated environmental situations.
4. Identify training requirements at various levels.

MANAGEMENT APPROACH:

The overall responsibility for compliance with the environmental management plan rests with the project proponent.

A certain degree of redundancy is inevitable across all management levels, but this is in order to ensure that compliance with the environmental management plan is crosschecked.

INSTITUTIONAL CAPACITY

Following functionaries will be involved in the implementation of EMP:

- Project Proponent
- HSE/Project Manager
- In-Charge Administration
- Supervisor of project

SCHEDULE OF IMPLEMENTATION

Training for the management and workers on environmental aspects of the project will be arranged on biannually basis during the operational phase of the project. It will be imparted by a team of experienced trainers.

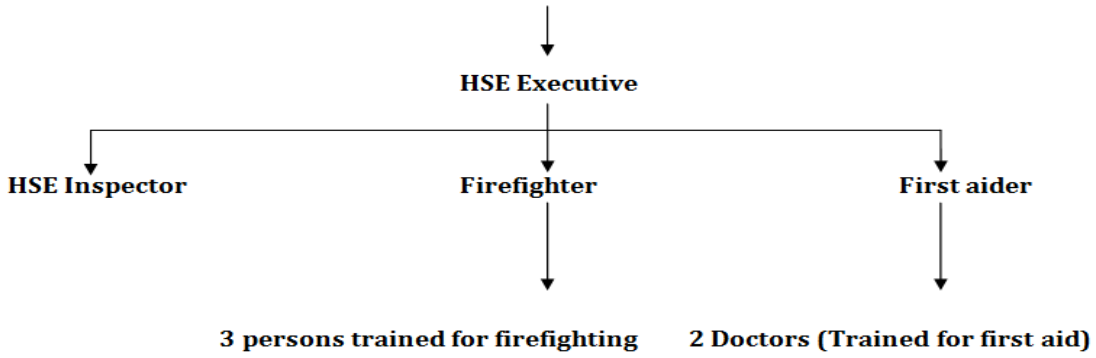


Figure: Institutional Capacity for the implementation of EMP

Management will hire or appoint HSE officer before the initiation of work at the project site. HSE officer will be responsible for conducting the training of the labor, which will be organized either by the management of industry or by the contractor.

Following schedules of training will be implemented:

Table: Training Program

Sr. No.	Description of program	Personnel involved	Time/ duration
1)	General HSE Training	Trainers and whole production facility staff	Regularly as planned by HSE Manager
2)	Instrument use/ workplace specific items	Trainers and whole production facility staff	Regularly as planned by HSE Manager
3)	PPEs use and safe work practices at work site.	Trainers and whole production facility staff	Regularly as planned by HSE Manager
4)	Reporting and investigating accidents/ incidents	Trainers and whole production facility staff	Regularly as planned by HSE Manager
5)	Emergency procedures	Trainers and whole production facility staff	Regularly as planned by HSE Manager
6)	Medical and first aid	Trainers and whole production facility staff	Regularly as planned by HSE Manager
7)	Health and safety promotion	Trainers and whole production facility staff	Regularly as planned by HSE Manager

In order to raise the level of professional and managerial staff, there is a need to upgrade their knowledge in the related areas. HSE Manager should play a key role in this respect and arrange the training programs. HSE Manager will provide training to staff and workers about the best environmental management practices at the site and affective implementation of the EMMP. The training modules will include air, noise and water pollution monitoring, social awareness, Environmental Laws, National Environmental Quality Standards (PEQS), Usage of personal protection equipment, and health and safety related issues on the construction site.

The HSE Manager will train all workers & staff in basic sanitation and health care issues (e.g., how to avoid malaria, and in general health and safety matters, and on the specific hazards of their work. Training should also consist of basic hazard awareness, site specific hazards, safe work practices, and emergency procedures for fire, evacuation.

HSE Manager will be responsible to conduct Training on regularly basis regarding health & safety, hygiene, firefighting and first aid.

TRAINING OF BUILDING CONTRACTOR

Training of building contractor & workers will be the part of the TORs regarding the construction of the scheme. The provisions given in EIA Report Chapter 4 Screening of Potential Environmental Impacts & Their Mitigation Measures will be followed.

TORs will be including the training and submission of reports in the following area:

1. Handling of Machineries in a safe way
2. Use of PPEs
3. Maintenance of vehicles and submission of Environmental Monitoring Reports
4. Maintenance of Water Consumption records
5. Testing of water and waste water and submission of Environmental Monitoring Reports
6. Placement of safety signs/boards during construction
7. Sprinkling of water on the roads and dusty tracks
8. Monitoring of generator emissions

Training regarding all other aspects of HSE will be ensured by the contractor during the construction phase.

PROPOSED ENVIRONMENTAL MONITORING

To oversee the environmental performance of the project through its lifecycle enforcing the PEQS an Environmental Monitoring Program should be formulated which ensures effective surveillance of the environmental parameters at various stages of the project development and compliances with PEQS and legal obligations. Monitoring for following Environmental Parameters is recommended:

- **AMBIENT AIR**

  Monitoring for ambient air should be conducted during operational activities of the project and report should be submitted to EPA Punjab.

- **NOISE**

  Regular monitoring for noise level should be maintained periodically during operation phases of the project and report should be submitted to EPA Punjab as per rule.

- **WATER QUALITY**

  Regular monitoring of water quality should be conducted during operational phases of the project and report should be submitted to EPA Punjab. Record should be maintained regarding the underground water pump and consumption.

Recommendation: Environmental Monitoring data log book should be maintained by the project proponent.

RESPONSIBILITY OF EMP

Overall responsibility for implementation of EMP is of project proponent. He has appointed an HSE/Project Manager of relevant qualification. HSE/Project Manager acts as Environmental Manager and will manage all HSE condition at the PEQS.

EQUIPMENT MAINTENANCE DETAIL

The subject project is the Construction of Petroleum Storage Unit in an already established Unit by M/S Walchem Industries Pvt Ltd. The company will maintain the records for Health Safety & Environment and will hire HSE manager to check and deal with the HSE issues. The company shall maintain PPEs, medical facilities, firefighting Equipment's as fire buckets, fire hydrants and fire extinguishers and records for their periodic filings or replacement.

ENVIRONMENTAL BUDGET

The cost which is required to effectively implement the mitigation measures is important for the sustainability of the Project in operation stage of the Project.

Company has allocated the Environmental Budget annually for the Training, maintenance and management of Environment that will include filling and maintenance of equipment's, restoration, plantation, and availability of PPEs, strategic planning to cope with any emergency situation and formulate the disaster management plan to cope with natural disaster. Any equipment or devices failure or replacement will not be included in this budget.

HSE training	On regular basis
Maintenance and management of environment	On regular basis
Maintenance of equipment	On regular basis
Availability of PPEs	During Working Hours
Strategic planning to cope with any emergency	As per policy
Formulate the disaster management plan to cope with natural disaster	As per policy

Sr. #	Aspects	Impact & Mitigations to be taken			
		Impacts	**Mitigation measures** **Construction/Operation**	**Responsibility**	**Monitoring**
			AMBIENT AIR QUALITY		
1.	Air Quality	Machinery Flue gas emissions from machinery and generators	Air quality monitoring is recommended on regular base Open disposal and burning of solid waste in the premises of building should be strictly banned. Pollution abatement technologies regarding air pollution will be adopted. Emissions inspection and monitoring should be done on regular basis	HSE Department	Environmental Consultant/EPA PUNJAB
			NOISE & VIBRATION		
2.	Noise	The major sources of the noise are production related machinery. Noise from generators (if any)	Personal Protective Equipment PPEs including Ear muffs, Ear plugs and other noise abating equipment will be provided to the workers and other staff.	HSE department	Environmental Consultant/ EPA PUNJAB

			Sound proof room should be built for generator (if any) to control the noise.		
HEALTH AND SAFETY					
3.	Health and safety	Health & safety issues of workers and nearby community	Trainings of the workers is recommended for health & safety, first aid and firefighting. Proponent must provide First aid facilities to workers in case of any injury or accident. Safe drinking water must be provided to workers, staff, and poor people of the area. Water consumption records should be maintained. Provision of Proper PPEs must be ensured at workplace. Assembly point and exit points must be available at workplace. Electric wires, D. Bs must be kept covered & closed to avoid any electric hazards. Smoking or any drugs should be prohibited during working hours or performing work. Safety signs & boards will be placed at the time of	HSE Department	Environmental Consultant/ EPA

			construction activity. Security guards will be appointed at the construction site.		
WASTE WATER					
4.	Waste water	Domestic waste water. Minor wastewater from production activities. Spread of diseases, underground water contamination.	Domestic waste water is being drained out in nearby drain after treated in septic tank. Ensure the tank is situated at a distance that prevents any accidental runoff or overflow from contaminating the DPL storage area.	HSE department	Environmental Consultant
SOLID WASTE GENERATION					
5.	Solid Waste Generation	Aesthetic degradation, foul smell etc. Solid waste generation from the machinery installation and production activities, domestic and process sources	A solid waste management plan should be formulated to deal with the proper disposal of solid waste, supervised by HSE Manager. Waste segregation is recommended at the source. Industrial ecology practices will be adopted wherever possible. 7 Rs of sustainability is recommended Hazardous waste should be disposed in separate bins and handed over to EPA approved contractors.	HSE Department	Environmental Consultant/ EPA PUNJAB

			Waste produced from building alteration/renovation should be sold to local market.		
ODOR					
6.	Odor	Odor may produce from raw material and during product manufacturing	Raw material should be covered to reduce odor Face masks must be provided to the workers and employees on production floor	HSE Department	Environmental Consultant/ EPA PUNJAB
ENERGY REQUIREMENT					
7.	Energy requirement	Resource depletion	Do not waste the energy/electricity when there is no need of it. Use energy efficient and ecofriendly equipment Use energy saving appliances Conduct and maintain records for energy audits Do not leave the appliances in running when there is no need It is recommended to save and conserve the energy and adopt energy efficient technologies in the factory.	HSE Department	Environmental Consultant/ EPA PUNJAB
SOCIO ECONOMIC IMPACTS					

8.	Language	Change in cultural language	Maximum employment of Local people is recommended to preserve the local cultural language. It will help in communication with the local people to resolve any emerging issue near the project area	Proponent	NA
9.	Education	Change in social behavior and economic gains	School and colleges exist in the area. The project proponent will initiate an educational awareness program with the coordination of the local people.	Proponent	NGO survey
10	Health	Social performance of the individuals in the area	The project proponent will assist the local impacted community for the improvement of health services Health clinic must be established for the project workers.	Proponent	Proponent
11	Culture and norms of the area	Change in culture by the influx of nomadic people	Maximum local employment should be ensured to preserve the culture of the area	Proponent	NGO survey/Environmental Consultant
12	Sewage and waste disposal	Diseases caused by improper sanitation	Subject project will uplift the economic status of the nearest human settlements. Awareness program will be initiated regarding the disposal of waste.	Proponent/ local NGO	NGO survey/ Environmental Consultant

CHAPTER # 7

STAKEHOLDERS PARTICIPATION

Social acceptability of the project and the area is a key to success. Consultation with the stakeholders is a tool for managing two-way communication between the project proponent and the affected public. Its goal is to improve decision making and built understanding by actively involving individuals, groups and organizations, which have stake in the project. This involvement increases project's long-term viability and enhances its benefits to locally affected people and other stakeholders.

In order to evaluate the socioeconomic and environmental impacts, filed surveys are extremely essential. In addition to the surveys at the preliminary stage, consultation with the community and their active participation plays a vital role in successful implementation of the project. To identity the different types of stakeholders and ascertain their perceptions about the project, an initial environmental examination was conducted. Informal group discussions were also held as an additional tool for obtaining feedback from the stakeholders that are being discussed in the following pages.

OBJECTIVES OF CONSULTATION

Public consultation plays a vital role in studying the effects of the project on the stakeholders and in the successful implementation and execution of the proposed project. Public involvement is a compulsory feature of environmental assessment, which leads to better and more acceptable decision making. The objective of the consultation with stakeholders is to help verify the environmental and social issues that have been presumed to arise and to identify those which are not known or are unique to the construction of the proposed unit.

The important general objectives of the consultation process are:

- Information dissemination, education and liaison;
- Identification of problems and needs;
- Collaborative problem solving;
- Reaction, comment and feedback on proposed project;
- Documenting mitigation measures proposed by the stakeholders;

METHODOLOGY OF CONSULTATION:

The EIA team carried out public consultations at various locations around the Project Site. The stakeholder's consultation during this phase of the work targeted the project area, administrative and private offices, Govt. offices, shops, etc. near the Project area:

- Selection of the stakeholders for consultation, reconnaissance of the project site and initial discussions with the neighboring industry workers, villagers, shopkeepers, drivers etc.
- Environmental consultants and social specialists and documenting the opinions of the stakeholders expressed during the meetings etc.

PROPONENT

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

RESPONSIBLE AUTHORITY

Management of M/s Walchem Industries Pvt Ltd is the responsible authority to take all measures prior to start the activity.

ENVIRONMENTAL PRACTITIONERS AND EXPERTS

Team of M/s Environmental Services of Pakistan (ESPAK) visited the project site, had discussions with stakeholders and consulted with the local people of nearby and other villages to evaluate the project socio-economic impacts. People provide the massive information about the project and have positive remarks regarding the project development.

OTHER DEPARTMENTS AND AGENCIES

For the impact analysis detailed meetings were held with the management of M/s Walchem Industries Pvt Ltd, local community, education institutes, health institutes and hospitals. Issues were discussed that may affect the environment and also the implementation of proposed project. All possible mitigation measures were considered and incorporated in the Environmental Management Plan.

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

AFFECTED & WIDER COMMUNITY

There is no affected community present in the radius of our study area. ESPAK team has consulted with the inhabitants of the different areas. They provided positive remarks regarding the subject project and in the favor of the subject activity for the proposed plant. Stakeholder's participation Performa's and socioeconomic questionnaire were get filled by the inhabitants to evaluate the project socio-economic impacts. List of respondents and socioeconomic questionnaires are attached as **Annexure** with the report.

Categories of stakeholders interviewed in the project area:

Sr. No.	Stakeholder Category
1.	Neighboring factory workers.
2.	Nearby residents
3.	Shopkeepers.
4.	Drivers.

In addition to the above categories, authorities of administrative and educational institutions, commerce and Investment Department (C&I), Environmental Protection Department (EPD) etc. were also consulted for more effective participation and appraisal of the proposed project.

ISSUES DISCUSSED:

Following issues were discussed during the stakeholder consultation:

- Overall activities of the project;
- Possible impacts on natural vegetation, air, land and properties;
- Possible mitigation measures;
- Benefits of the project specifically for the local people.

SAMPLE SIZE

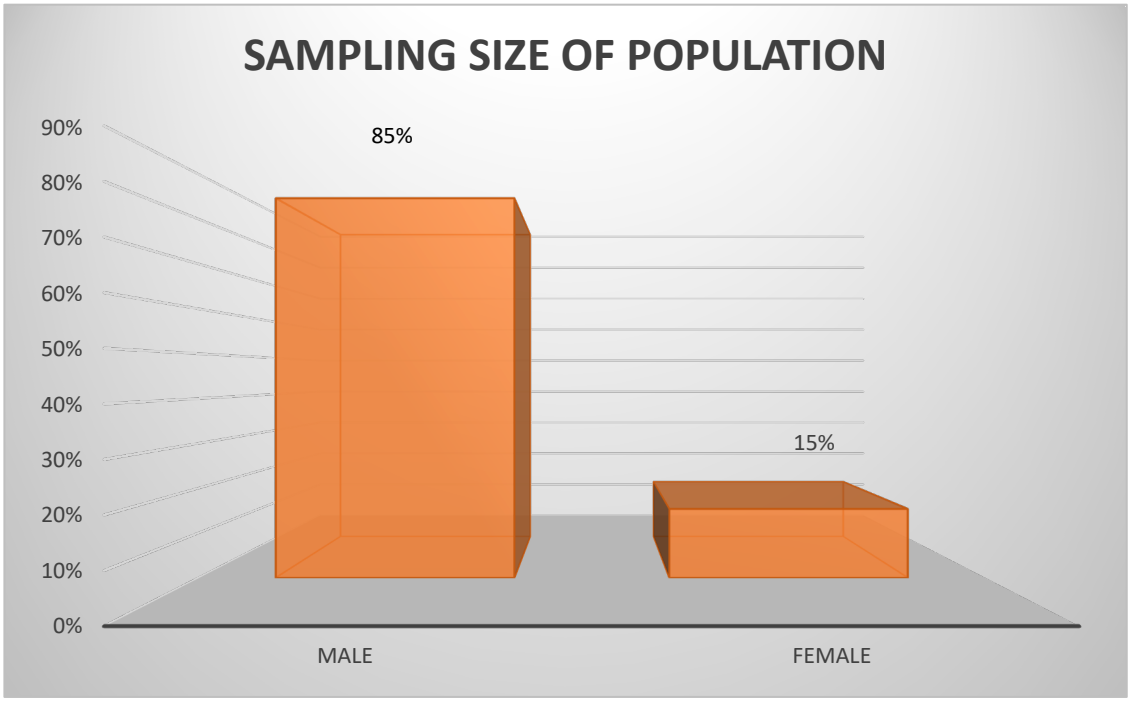
Sample size of 30 respondents was selected by the Team of consultants for conducting the socioeconomic survey. Women were also consulted for the said survey; some of their names are

mentioned in the above list of respondents while most of them were not willing to give personal information.

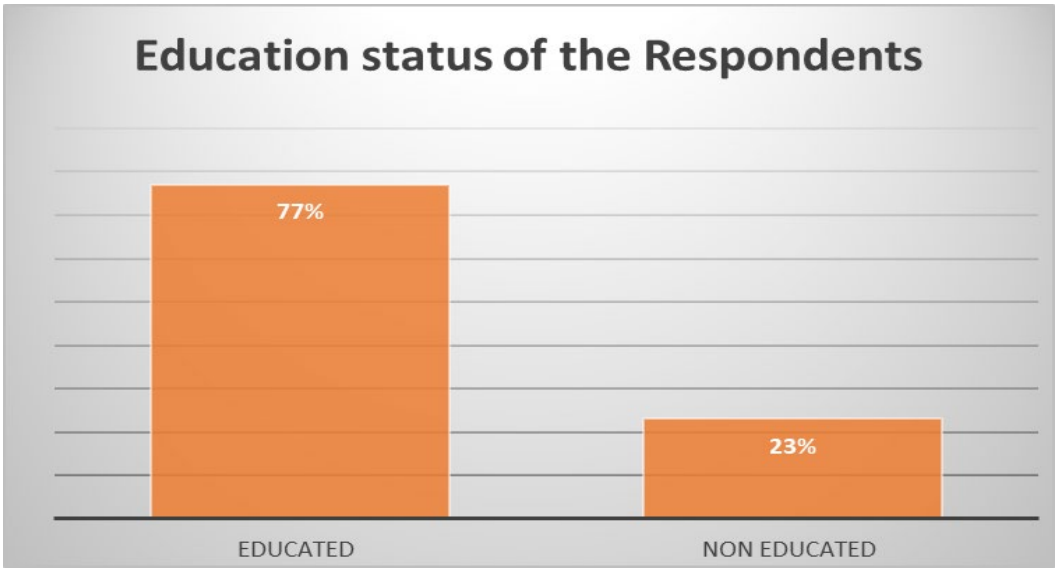
STATISTICAL ANALYSIS

SPSS 19.0 has been used for the statistical analysis of the data collected during the visit of study site area through questionnaires; List of questionnaires is attached herewith.

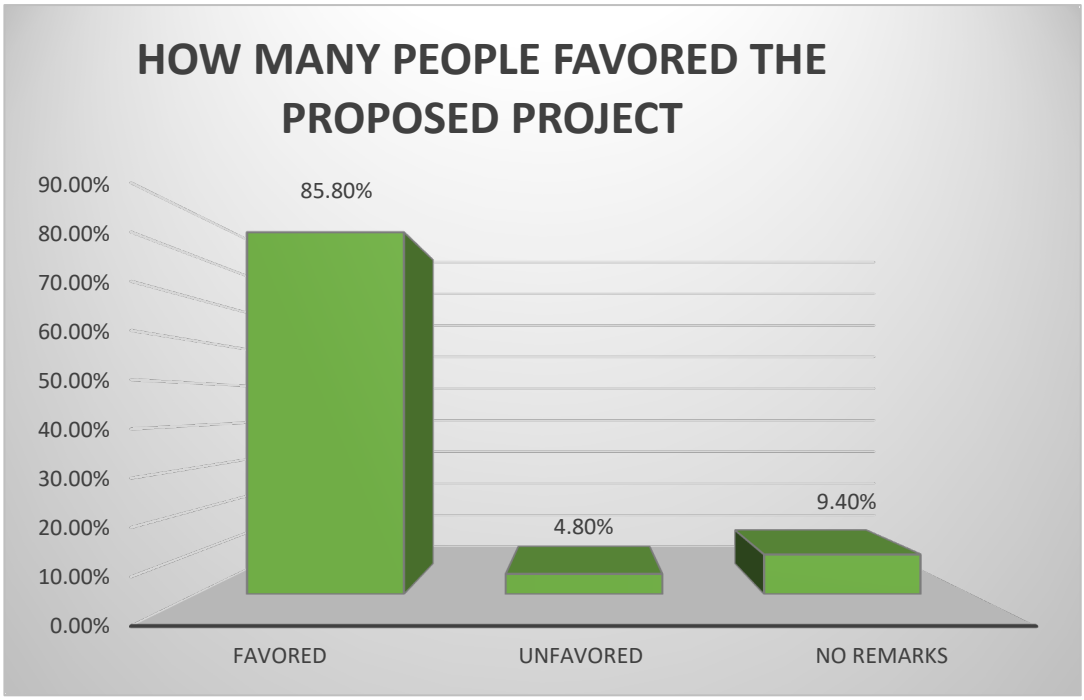
Graphical representation of analysis is given below:



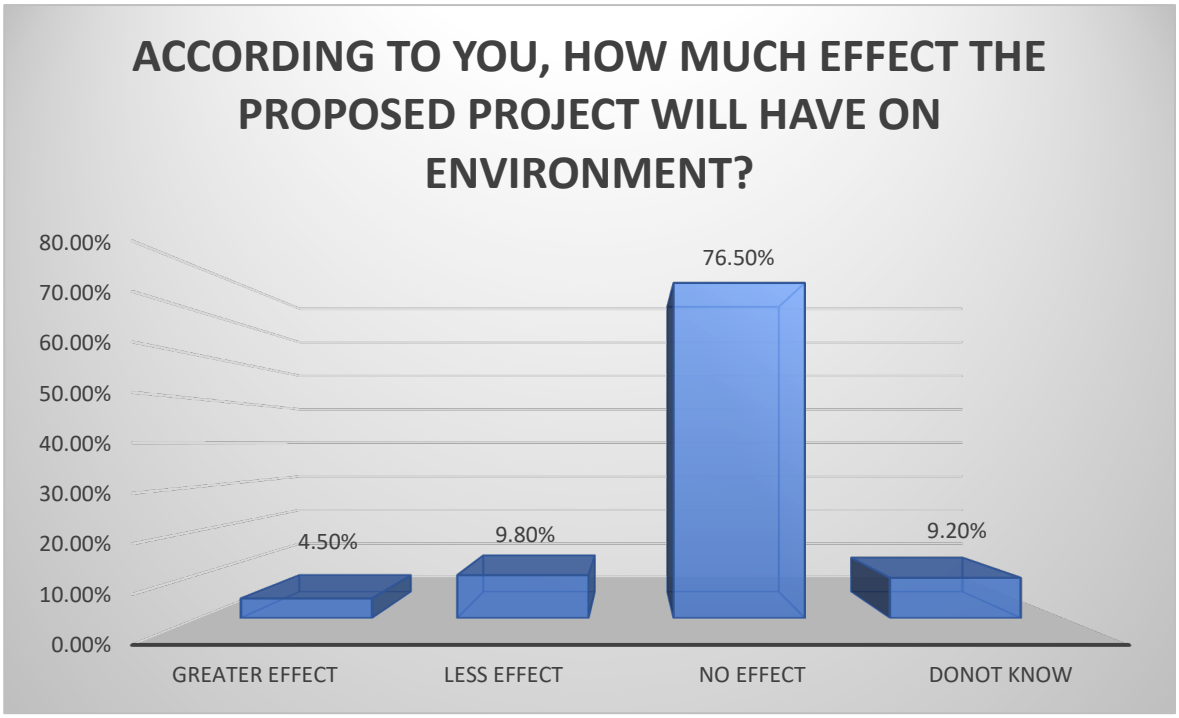
In the sampled population, 85% respondents were male while 15% respondents were female. The number of female respondents is less as compared to male respondents because according to the social binding female hesitates to respond or communicate comfortably.



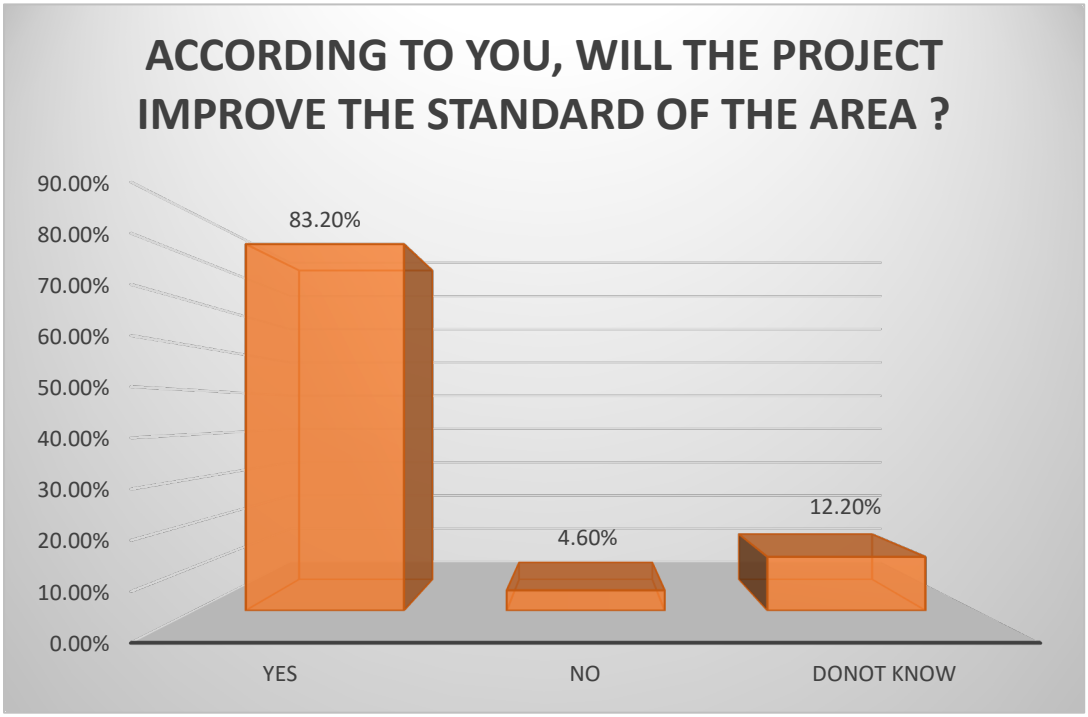
In the sampled population, 77% respondents were educated while 23% were uneducated. Overall education status of the area is good.



As per survey, 85.80 % people favored the project and they gave positive remarks regarding the subject project. While 9.40% respondents had no opinion regarding the project and 4.80% respondents were not satisfied with the project because they think that development will affect the natural aesthetics of the area.



As per survey, 4.50% respondents said that subject project will affect the environment of the area, 9.8% said that there will be less effect on the environment, 76.50% respondents said that the project will not affect the environment and 9.20% said that they have no idea regarding the subject project. Most of the population was not aware about the environmental importance; they were giving their remarks according to their own knowledge



As Per survey, 83.2 % people said that the project will improve the standard of the area, 4.60% said that it will have no impact on the area while 12.20 % respondents gave no remarks.

FINDINGS OF THE OVERALL DISCUSSION:

- It will enhance the socio-economic conditions/values of the area.
- Project will increase revenue generation for the Government.
- It will create employment opportunities.
- Local people will be given preference for employment in the proposed project.
- Construction of the project will be completed in the designated timeframe to limit adverse impacts of construction.
- There will be no significant additional load on the existing infrastructure i.e. utilities of water, telephone, electricity etc. due to the development of the proposed project.

CHAPTER # 8

CONCLUSION AND RECOMMENDATIONS

Based on the study conducted for Environment Impact Assessment (EIA) for the subject project, the following conclusions are made:

CONCLUSIONS

- The EIA study reveals that the project is economically viable, socially acceptable and environment friendly.
- It will generate additional jobs during construction and operation phases.
- The proponent has committed to implement the project in the environment friendly manner.
- M/s Walchem Industries Pvt Ltd intends to register the project with local Government.
- M/s Walchem Industries Pvt Ltd has prepared and implemented very comprehensive Emergency Preparedness and Response Standard Operating Procedures.
- M/s Walchem Industries Pvt Ltd has prepared and implemented very comprehensive Security and Fire Fighting Standards Operating Procedures.

RECOMMENDATIONS

- In view of the comprehensive screening process and findings of the present study there is no need of conducting further investigations.
- Tree plantation inside the unit and near the unit is recommended.
- The untreated wastewater will not be reused for irrigating the vegetation and lawns.
- High standards of bio-security and safety will be enforced during operation stage. Safety of the workers will be top priority for the management.
- The management of M/s Walchem Industries Pvt Ltd will continue to assist the local communities as a corporate/social responsibility.
- The present EIA report is enough to meet the administrative and legal framework. Therefore, the environmental approval may be accorded for the present project.