

Environmental Impact Assessment (EIA) Report

M/S Khan Soap Mill

Khewat No. 724/716, Khatooni No. 1206 Mouza Zahara
Muhammadi District Multan.

Submitted By:

Mr. Aamir Javed

Prepared By:

**Center for Business Solution
Consultants**

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EXECUTIVE SUMMARY

The executive summary is an outline of the key outcomes in EIA (Environmental Impact Assessment). The proponent intends to take environmental approval of the said project from Environment Protection Agency (EPA) in order to comply with all the rules and regulations. The name of the project is M/s Khan Soap Mill located at Khewat No. 724/716, Khatooni No. 1206 Mouza Zahara Muhammadi District Multan. The project involves the soap production over an area of 62572.739 SFT. The basic detail of the project is provided in this chapter.

The establishment of a soap manufacturing unit is important as it contributes to meeting the growing demand for essential hygiene and cleaning products, thereby supporting public health and sanitation. The project will not only promote local production and reduce reliance on imported products but also generate employment opportunities, enhance industrial development, and contribute to the national economy. Moreover, by introducing modern and efficient production techniques, the factory can ensure quality products while incorporating sustainable practices to minimize environmental impacts.

According to projects categorization for environmental assessment studies, the project falls under **Schedule II** (list of projects requiring EIA), **Category B** (Manufacturing & Processing) & Sub-Sector 2 (Chemical Manufacturing Units including pharmaceuticals & Cosmetic) as per the IEE/EIA Regulations 2022, established under Section 12 of the Punjab Environment Protection Act 1997 (Amended 2012). Center for Business Solution Consultants has been engaged as the environmental

This project falls into the category of EIA (Environmental Impact Assessment) which presents a detailed account of the foreseeable environmental and social impacts likely to emanate from the project. The EIA (Environmental Impact Assessment) report is prepared to assess the potential impacts likely to occur from the project's entire life cycle on the local environmental quality and communities. The assessment produced a list of impact mitigation measures for the project to undertake to minimize the detrimental impacts on the

environment and communities nearby. Details of the process description is given in Chapter 03 under the heading of process details.

Title and location of the project

The name of the project is “M/s Khan Soap Mill” at Khewat No. 724/716, Khatooni No. 1206 Mouza Zahara Muhammadi District Multan over an area of 62572.739 SFT.

Name of the Proponent

The detail of the proponent is given below:

Table 1 Details of Proponent

Details of the Proponent	
Proponent name	Mr. Aamir Javed
Address	Tughlaq road, House No. 1298/W-10, Mohalla Kotla Tolly Khan, Multan

A brief outline of the proposal

Table 2 Brief Outline of Project

Title of Project	M/s Khan Soap Mill
Proponent	Mr. Aamir Javed
Total Area	62572.739 SFT
Description of project	This project involves setting up a soap manufacturing factory to produce high-quality soaps using modern machinery. It will meet growing market demand while generating employment and supporting local industry.
Nature of Project	Soap production factory
Location of the project	Khewat No. 724/716, Khatooni No. 1206 Mouza Zahara Muhammadi District Multan
GPS Location	30.11679 N, 71.47252 E (Google map is attached to A3 size with file)
Cost of project	60 million PKR
Production Capacity	20-30 tons/day
Raw Material	Fat/oil, Alkali (caustic soda)

Final Products	Soap
Cutting of Trees	There will be no cutting of trees. After construction trees will be planted
Manpower	Construction: 10-12 Persons
	Operation 08-10 Persons
Period of Construction	Approx. 01 year
Assessed Environmental issues	Solid and liquid waste will be environmental issues. So, these wastes should be disposed of via EPA approved vendor.
Solid Waste	Negligible amount of solid waste will be generated only which will be domestic in nature.
Wastewater Management	Generated wastewater will be disposed of after the treatment in the Septic tank in the industrial estate drain.
Consultants	Center for Business Solution Consultants
Compliance	In accordance with Punjab Environmental Protection Act & IEE/EIA Regulations 2022.

Legal and Administrative Framework

The national guidelines and legislations relating to the environment considered for the project include, National Conservation Strategy (1992), National Environment Policy (2005), Pakistan Labor Policy (2010), Punjab Environmental Protection Act (PEPA 1997), amended PEPA, (2012), Punjab Environmental Quality Standards (PEQS), Land Acquisition Act (1894), Cutting of Trees (Prohibition) Act (1975), Punjab Wildlife Act (1974), Punjab Plantation and Maintenance of Trees Act (1974), Antiquities Act (1975) etc.

Environment related documents have been reviewed including submission of environmental assessment study report to obtain environmental approval was made mandatory by the Pakistan Environmental Protection Ordinance (PEPO), 1983 and the Pakistan Environmental Protection Act (1997). Section 12(1) of the PEPA (1997) amended 2012 stipulates that no project involving construction or any change in the physical environment can be undertaken unless an IEE or an EIA is conducted, and approval (NOC) is received from the relevant provincial environmental agency.

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

Major Impacts

Since the project is a soap manufacturing unit, it is likely to produce environmental impacts both during construction and operation phases. In the construction phase, dust emissions may occur from land clearing, excavation, and transportation of materials, while gaseous emissions may arise from construction machinery and vehicles. Noise pollution is expected due to the operation of equipment, and solid waste will be generated from construction debris and packaging materials. Socioeconomically, this phase will provide temporary employment opportunities, though some traffic congestion may occur from the movement of machinery and materials.

During the operational phase, environmental impacts are expected from routine activities of the soap mill. Dust may be generated from vehicle movement and handling of raw materials, while gaseous emissions could result from the use of boilers, furnaces, and other production machinery. Noise will persist due to vehicles and equipment, and solid waste will mainly include domestic waste and packaging material. Wastewater will be produced from domestic use and washing/cleaning activities within the factory. Soil contamination risks may arise if chemicals, oils, or raw materials are not properly stored and managed. On the positive side, the operational phase will create stable employment opportunities and contribute to the local economy, with transport-related impacts expected to be negligible.

Mitigation Measures

The mitigation measures of potential environmental impacts resulting during construction and operational phase of the project are given below:

During construction phase:

- Usage of water sprays to control dust during excavation and construction activities.

- Implement dust barriers or screens around construction sites to minimize dispersion.
- Use low-emission machinery and vehicles.
- Maintain and regularly service all construction equipment to minimize emissions.
- Use noise barriers or enclosures around high-noise equipment.
- Equip machinery with noise-reducing features.
- Segregate and properly dispose of construction waste, recycling materials where possible.
- Implement temporary wastewater systems for construction activities.
- Treat and manage wastewater from domestic sources appropriately.
- Limit vehicle movement during peak traffic hours to reduce congestion.
- Generators will be installed with proper enclosure, tuning and maintenance to control emissions.

During operational Phase:

- Adoption of effective solid waste management practices for domestic refuse.
- Installation of a septic tank with sufficient capacity before discharging into nearby wastewater channels.
- Erection of safety signage to prevent traffic-related incidents on adjacent roads.
- Disposal of process-related solid waste by an EPA-certified contractor.
- Establishment of a dedicated health and safety department to foster a secure and healthy workplace, aiming to reduce accidents and improve staff morale.
- Regular Health, Safety, and Environment (HSE) training for employees.
- Mandatory use of Personal Protective Equipment (PPE), such as gloves and masks, especially while handling hazardous materials.
- Direct reporting protocols for any incidents to the relevant authorities.
- Enhancement of the green zone and ongoing tree planting during the operational phase to further diminish dust emissions.

- A well-designed ventilation system and preventive maintenance schedule for generators and machinery to check air pollution levels.

Proposed Monitoring

During the construction phase, regular monitoring focused on key environmental and safety aspects such as ambient air quality (especially dust levels), vehicle and equipment exhaust emissions, noise levels, solid waste management, soil contamination, and worker's safety. Dust levels and exhaust emissions tracked to ensure compliance with air quality standards, while noise will be monitored to minimize disturbances. Solid waste managed appropriately, and soil contamination risks will be assessed during excavation. Worker safety prioritized through ongoing safety checks and the use of personal protective equipment (PPE).

In the operational phase, monitoring will be done quarterly, focusing on ambient air quality (dust levels), noise levels, solid waste management, soil contamination, and community and worker safety. Dust levels from feed handling and vehicle movement will be monitored, along with noise from soap mill machinery. Solid waste disposal and manure management practices will be assessed, while soil contamination risks will be mitigated. The safety of both workers and the surrounding community will be regularly reviewed to ensure a safe and healthy environment. A detailed monitoring plan is provided in Chapter 06.

Conclusions and Recommendations

The project will have many positive effects, such as creating jobs and business opportunities, which will increase local incomes and improve social infrastructure. It will help improve the living conditions of people in the area, especially those with lower incomes, and boost the local economy.

While there may be some small negative impacts, such as air quality, noise, biodiversity, and dust, these can be controlled with proper mitigation measures. The environmental impacts can be managed cost-effectively, and steps have been taken to ensure minimal effects through careful planning and monitoring. Provide ongoing environmental training for workers and staff to

ensure everyone is aware of environmental responsibilities and best practices. Ensure effective water management strategies, such as rainwater harvesting and wastewater treatment, to reduce water consumption and pollution risks. It is recommended that the project proponent obtain environmental approval (No Objection Certificate) from the Punjab Environmental Protection Agency (Punjab-EPA) before starting construction, as required by regulations.

1 INTRODUCTION

1.1 General

The Khan Soap Mill project aims to establish a modern facility for the production of soaps to meet the growing demand for hygiene and cleaning products. The factory will be equipped with machinery for saponification, mixing, molding, stamping, and packaging of soaps, along with proper storage and utility areas. During the construction phase, temporary environmental impacts such as dust emissions, noise from equipment, and solid waste generation are anticipated. However, this phase will also generate positive socioeconomic benefits by creating employment opportunities for local workers and supporting allied services.

In the operational phase, the soap mill will continue to contribute to economic growth through long-term employment generation and the supply of essential consumer products. At the same time, routine industrial activities may result in environmental impacts such as dust from material handling, gaseous emissions from boilers and machinery, noise from equipment, and wastewater from domestic and cleaning activities. With the adoption of appropriate mitigation measures and sustainable practices, the project is expected to operate efficiently while minimizing adverse environmental effects and contributing positively to the local community and industry.

1.2 Purpose of the Report

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

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

The proponent feels its social, moral, and legal obligation to protect the environment. It is in this context that the company initiated the process of

gaining Environmental Approval from the EPA, Government of Punjab. According to the direction of the EPA, as detailed in the preceding para under "Introduction" this EIA (Environmental Impact Assessment) is being submitted for issuance of the said Environmental Approval in compliance with the Punjab Environmental Protection Act -1997 (Amended 2012) Section 12.

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

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

1.3 Identification of the project and proponent

The details of the project and proponent are given below:

Table 2 Proponent & Project Details

Details of the Project and Proponent	
Proponent name	Mr. Aamir Javed
Proponent designation	Proponent
Address of proponent	Tughlaq road, House No. 1298/W-10, Mohalla Kotla Tolly Khan, Multan
Project title	M/s Khan Soap Mill
Location of project	Khewat No. 724/716, Khatooni No. 1206 Mouza Zahara Muhammadi District Multan

Description of project	This project involves setting up a soap manufacturing factory to produce high-quality soaps using modern machinery. It will meet growing market demand while generating employment and supporting local industry.
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1.4 Consultant Information

The initiator has contracted with Center for business solution consultants for the execution of an EIA (Environmental Impact Assessment) for the aforementioned project, in alignment with the standards and guidelines set forth by the Environmental Protection Agency (EPA) of Punjab. To fulfill this objective, Center for business solution consultants has assembled a team of experts, including environmental specialists, environmental engineers, and chemical engineers. Further information on the consultancy team is provided below:

Details of the Consultant	
Company name	Center for Business Solution Consultants
Address	259B millat Chowk Faisalabad
Contact No.	0301-1198600

1.5 Nature and size of the project

The project is an soap mill spread over an area of 62572.739 SFT. As a result, of the project, around 10-12 people got jobs during the construction phase and around 08-10 people will be engaging during the operational phase of the project.

Table 3 Schedule of area

Schedule of Area		
I.	Total Area of Plot	62572.739 SFT
II.		11K-11M-22Y
III.	Ground floor covered area	18180 SFT
IV.	Total Covered Area	18180 SFT
V.	Open Area of the Plot	44392.739 SFT

1.6 Location

The project site is located at Khewat No. 724/716, Khatooni No. 1206 Mouza Zahara Muhammadi District Multan. The coordinates of the project area are 30.11679 N, 71.47252 E.

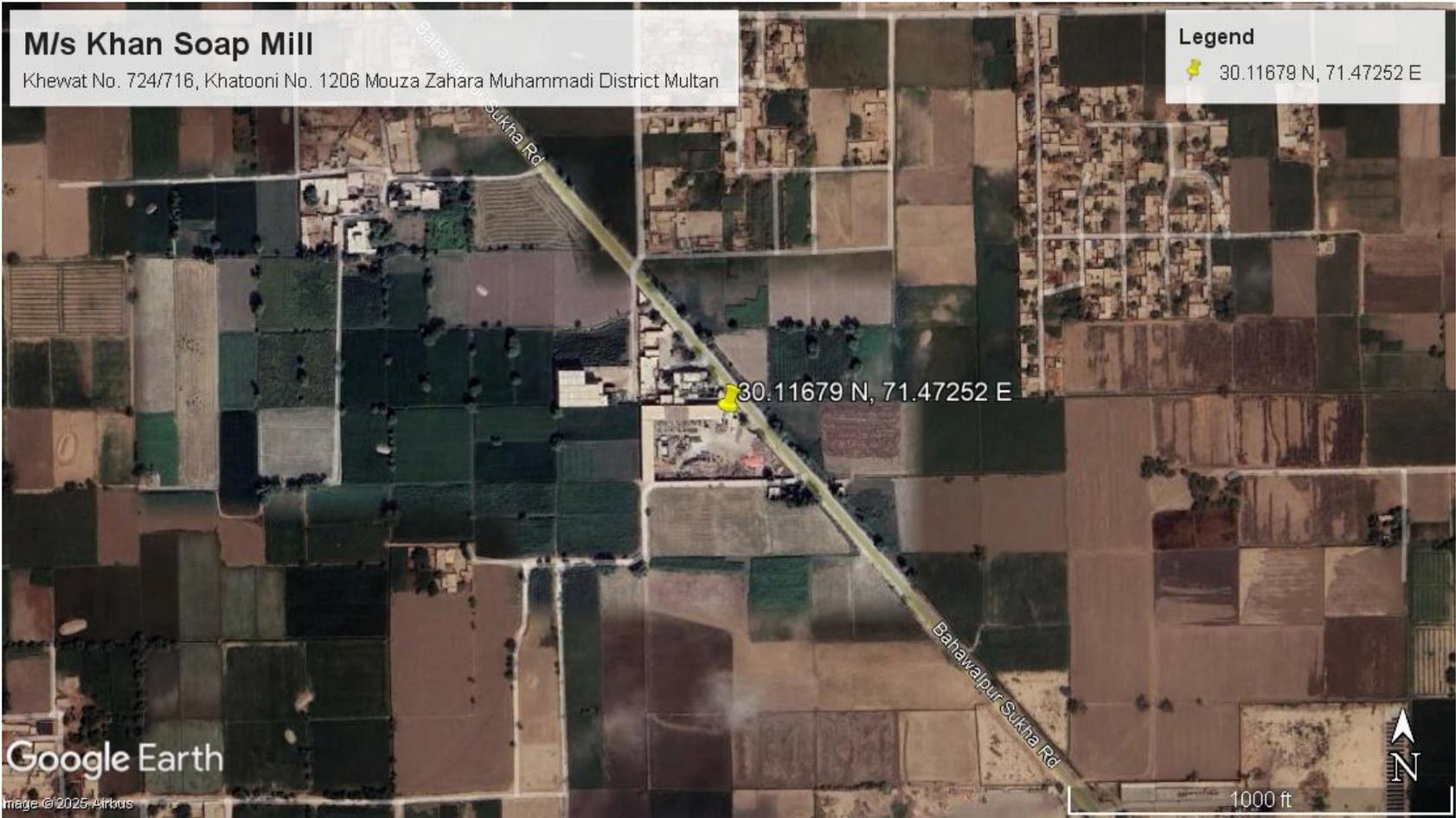


Figure 1 Project Location

1.7 Extent of the EIA study, scope of the study, magnitude of the efforts

This Environmental Impact Assessment (EIA) study has been conducted in accordance with Serial 2.3 of the *Guidelines for the Preparation and Review of Environmental Reports, October 1997*. In compliance with the Pakistan Environmental Protection Act (PEPA), 1997 (amended 2012), the EIA report has been prepared by a team of environmental experts of the consultant. This document evaluates the environmental impacts associated with the establishment and operation of a the said project, covering the physical, ecological, and socio-economic aspects, while identifying potential positive and negative impacts. However, any external developmental activities beyond the project site, such as road rehabilitation or the establishment of unrelated industries, are not included in this EIA study.

2 POLICY, LEGISLATION, LEGAL & ADMINISTRATIVE FRAMEWORK

2.1 General

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

According to environmental laws of the country development projects must undergo the process of Environmental Impact Assessment (EIA) or Initial Environmental Examination (IEE) to predict and mitigate the impacts of the development at an early stage.

2.2 Screening

The project falls under **Schedule II** (list of projects requiring EIA), **Category B** (Manufacturing & Processing) & Sub-Sector 2 (Chemical Manufacturing Units including pharmaceuticals & Cosmetic) of the IEE / EIA Regulations 2022 made under section 12 of Punjab Environment Protection Act 1997 (Amended 2012). Details of the process description are given in **Chapter 03** under the heading of project description.

2.3 Existing Regulation and Framework

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

2.4 Relevant Legal / Institutional Framework

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

2.4.1 National Conservation Strategy, 1992

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

2.4.2 PEPO, 1983 and PEPA 1997 (Amended 2012)

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

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

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

2.4.3 National Environmental Policy 2005

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

2.4.4 Review of EIA and IEE Regulations, 2022

The GOP has issued Review of Initial Environmental Examination and Environmental Impact Assessment Regulations 2022, to review the Initial Environmental Examination (IEE) / Environmental Impact Assessment (EIA) Reports.

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

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

2.4.6 Punjab Environmental Quality Standards (PEQS)

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

2.4.7 Guidelines for Sensitive and Critical Areas

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

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

Environmental Assessment is the Primary means of managing the approval of new development proposals in Pakistan. Environmental Assessment allows

for the systematic examination of proposals, clear procedures which provide for the interests of relevant Government Departments and other stakeholders to carefully consider.

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

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

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

2.4.10 Punjab Wildlife Protection Act, 1974

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

2.4.11 Forest Act, 1927

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

2.4.12 Explosive Act, 1884

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

2.4.13 Punjab Local Government Ordinance, 2001

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

2.4.14 Pakistan Penal Code, 1860

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

Sec 268: Public Nuisance

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

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

Sec 278: Making atmosphere noxious to health:

Sec 284: Negligent conduct with respect to poisonous substances:

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

Sec. 291: Continuance of nuisance after injunction to discontinue.

2.4.15 Punjab Land Use Rules 2009

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

2.4.16 Antiquities Act 1975

The law relates to the protection of Antiquities, monuments, and National & International heritage. Compliance of this Act is mandatory for the

Installation of Generators. Under section 22 of the Act no development plan or scheme or new construction can be done within distance of 200ft from the boundary of the monuments/ National Heritage. There is no historical Site or monuments in the proximity of the project.

2.4.17 Solid Waste Management Rules 2005

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

2.4.18 Labor Laws

The labor laws apply to child labor and measuring instruments.

2.4.19 Safety & Civil Defense Laws

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

2.4.20 Guidelines for Critical and Sensitive Area

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

3 SCOPING

The scoping in Environmental Impact Assessment involves a comprehensive assessment of the potential impacts of a project or activity, including direct and indirect impacts, cumulative impacts, and potential long-term effects. This assessment is carried out by a team of environmental and social experts, who analyze the proposed project or activity in detail and identify potential risks and impacts on various aspects of the environment, such as air quality, water quality, biodiversity, and cultural heritage. In this Environmental Impact Assessment, a public consultation process is involved, where members of the public and other stakeholders can provide feedback and raise concerns about the proposed project or activity.

3.1 Spatial and Temporal Boundaries of Environmental Assessment

Due to construction of the proposed project. Within a radius of 1-km, no residential area or any cultural heritage found over there as represented in figure given below. By considering all these factors the current project will be installed by adopting proper mitigation measures to avoid disturbance in nearby areas and the local community. In the current project no significant emission will be observed because in the proposed project there will be only storage. Wastewater quality will be measured to ensure PEQS. No environmentally sensitive area is present within safe distance that could be impacted due to proposed project.

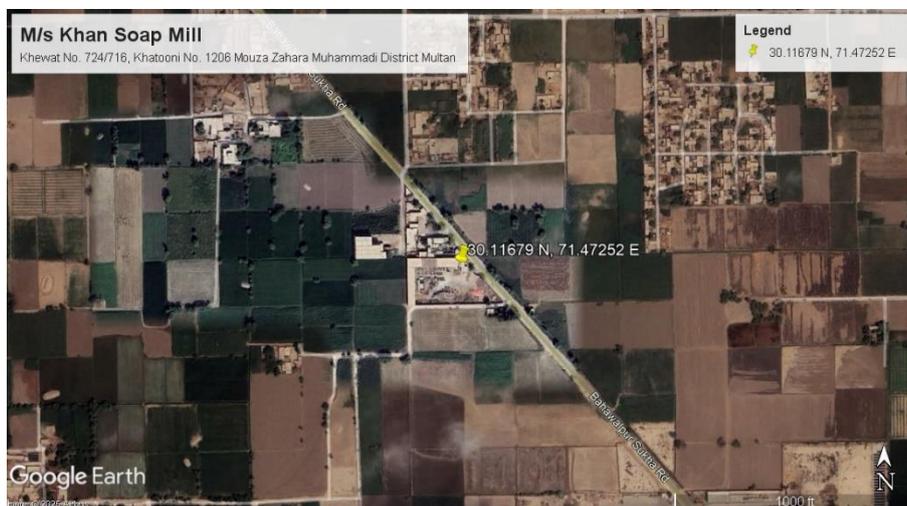


Figure 2 Radius of 2 Km from Project Site

3.2 Important Issues and Concerns Raised during Consultation

During consultation it was observed that many people were in favor of the project but some of the issues and concerns were raised. During survey following concerns of local community, Government Departments, Environmental Practitioners and Experts, nearby industries were noted:

- Local should be preferred for the job opportunities.
- Proper training should be given to workers.
- Noisy activities should be confined.
- Air pollution should be controlled effectively.
- There should be careful handling of animal waste.
- Wastewater should not dispose of without proper treatment.
- Solid waste must be collected timely.
- A proper wastewater treatment should be installed.
- Ensure the tree plantation in the vicinity of area.
- Health and safety of workers should be ensured.
- EMMP should be designed and enforced with great spirit.
- Respective team officers should be responsible for the implementation of management plan and actions.
- Avoid the excessive use of groundwater. Limited amount of water should be use.
- Cleanliness of area should be ensured.
- To reduce or avoid air pollution transport vehicles should be covered in the construction phase.
- Proponent shall work for betterment of community.

3.3 Significant Impacts and Factors to be Determined

The factors and impacts to be determined around the project site are:

- Dust and Particulate emissions
- Wastewater generation and its treatment
- Control Air emissions
- Solid waste management

- Occupational Health and safety
- Site Security
- Check and balance of machinery.
- Traffic Management
- Hygiene management
- Community impacts
- Job opportunities for locals
- Confined noisy activities.
- Resource conservation
- Odor producing in the process unit.
- Avoid excessive water consumption.
- Energy efficient techniques must be adopted.
- Proper site restoration after construction
- Tree plantation at designated green areas
- Emergency preparedness

4 ALTERNATIVE CONSIDERATION

Alternatives are recommended and examined to determine the best method of achieving project objectives, while minimizing environmental impacts. The discussion and analysis of alternatives in an EIA study should consider other practicable strategies that will promote the elimination of negative environmental impacts identified.

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

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

4.1 Site alternative their selection and rejection criteria

The chosen location for the project of M/s Khan Soap Mill is situated in Khewat No. 724/716, Khatooni No. 1206 Mouza Zahara Muhammadi District Multan, making it an ideal site for the project. The location is spacious enough to accommodate the required facilities and infrastructure. With its existing infrastructure and strategic position, we believe this site is perfectly suited for the development. Additionally, there are no historical sites or recreational areas in the vicinity. No alternative sites were considered for the establishment of the unit, as this location best meets all the necessary criteria, including accessibility, space requirements, and proximity to essential infrastructure. The chosen site is optimal for the successful implementation of the project, providing a secure, efficient, and sustainable environment for the project.

Key characteristics of the site include:

- ✓ Availability of transportation infrastructure, including a well-developed road network.
- ✓ No significant land damage is anticipated from the project's implementation.
- ✓ No alternative sites are considered due to the strategic advantages of this location.

4.2 Environmental Alternatives, their selection and rejection criteria

Upon completion of construction, comprehensive plantation efforts will be carried out to improve the surrounding environment. A maximum number of trees will be planted in and around the project site to enhance the aesthetics of the infrastructure, reduce air pollution, and mitigate noise pollution. Additionally, a well-designed sewage and solid waste management system will be implemented to prevent contamination and ensure that waste is managed in an environmentally responsible manner.

To further minimize environmental impact, the project will focus on reducing workplace accidents and injuries through strict safety protocols and effective training programs. These measures aim to not only protect the workforce but also contribute to a safer and healthier working environment.

Moreover, a commitment to improving workforce morale will be emphasized by providing proper facilities and creating a conducive environment that promotes productivity and well-being. These initiatives are all part of the project's efforts to minimize its environmental footprint while maximizing its positive contributions to the community and the workforce. In terms of site selection, environmental factors such as air quality, noise levels, waste management capabilities, and the potential for enhancing the local ecosystem were critical considerations.

4.3 Economic Alternatives, Their Selection and Rejection Criteria

The project is expected to significantly boost local employment by creating opportunities for qualified and skilled workers. In line with this, the selection of technologies and machinery for the project has been carefully chosen to ensure economic efficiency, both in terms of initial investment and long-term operational costs. The selected technologies are cost-effective and provide high operational efficiency, ensuring the project remains financially viable and sustainable.

Additionally, tree plantation will be a key feature of the project, providing not only environmental benefits such as cooling the area and acting as a noise barrier but also contributing to the local economy through improved aesthetics and air quality

To further reduce operational costs, the project has been designed to maximize the use of natural daylight, reducing the need for artificial lighting during the day. For nighttime operations, energy-efficient LED lighting will be used, significantly lowering electricity consumption and minimizing energy expenses over time.

Economic alternatives were considered based on their ability to reduce operational costs, enhance energy efficiency, and create long-term employment opportunities.

5 PROJECT DESCRIPTION

The proponent intends to take environmental approval of the said project from Environment Protection Agency (EPA) in order to comply with all the rules and regulations. The name of the project is M/s Khan Soap Mill located at Khewat No. 724/716, Khatooni No. 1206 Mouza Zahara Muhammadi District Multan. The project involves the soap production over an area of 62572.739 SFT. The estimated cost for the subject project will be about 60 million PKR.

The project will pose positive impacts in terms of employment opportunities, will create jobs during operation and will contribute to the country's economy by meeting the market demands.

5.1 Type and category of the project

The project spreads over an area of 62572.739 SFT. As a result of the project, around 10-12 people got jobs during the construction phase and another around 08-10 people will be engaging during the operational phase of the project.

The project falls under **Schedule II** (list of projects requiring EIA), **Category B** (Manufacturing & Processing) & Sub-Sector 2 (Chemical Manufacturing Units including pharmaceuticals & Cosmetic) of the IEE / EIA Regulations 2022 made under section 12 of Punjab Environment Protection Act 1997 (Amended 2012).

5.2 Objective of the project

The objective of the aforesaid project i.e. M/s Khan Soap Mill for economic growth and to meet the demand of the market. The project will have the following advantages:

- **Economic Growth:** To contribute to economic development by providing a new source of income and employment.
- **Health and safety:** To enhance health and safety through the provision of quality products.
- **Market Demand:** To fulfill the market demand, ensuring the availability of cost-effective products.

- **Socio-economic Uplift:** To contribute to the socio-economic uplift of the proponent and the local community by adding value through this project.

5.3 Project Location and Layout

The site for the project of “M/s Khan Soap Mill” is located at Khewat No. 724/716, Khatooni No. 1206 Mouza Zahara Muhammadi District Multan. The location of the project is given below, and layout of project is attached within the file. The coordinates of the project site are 30.11679 N, 71.47252 E.

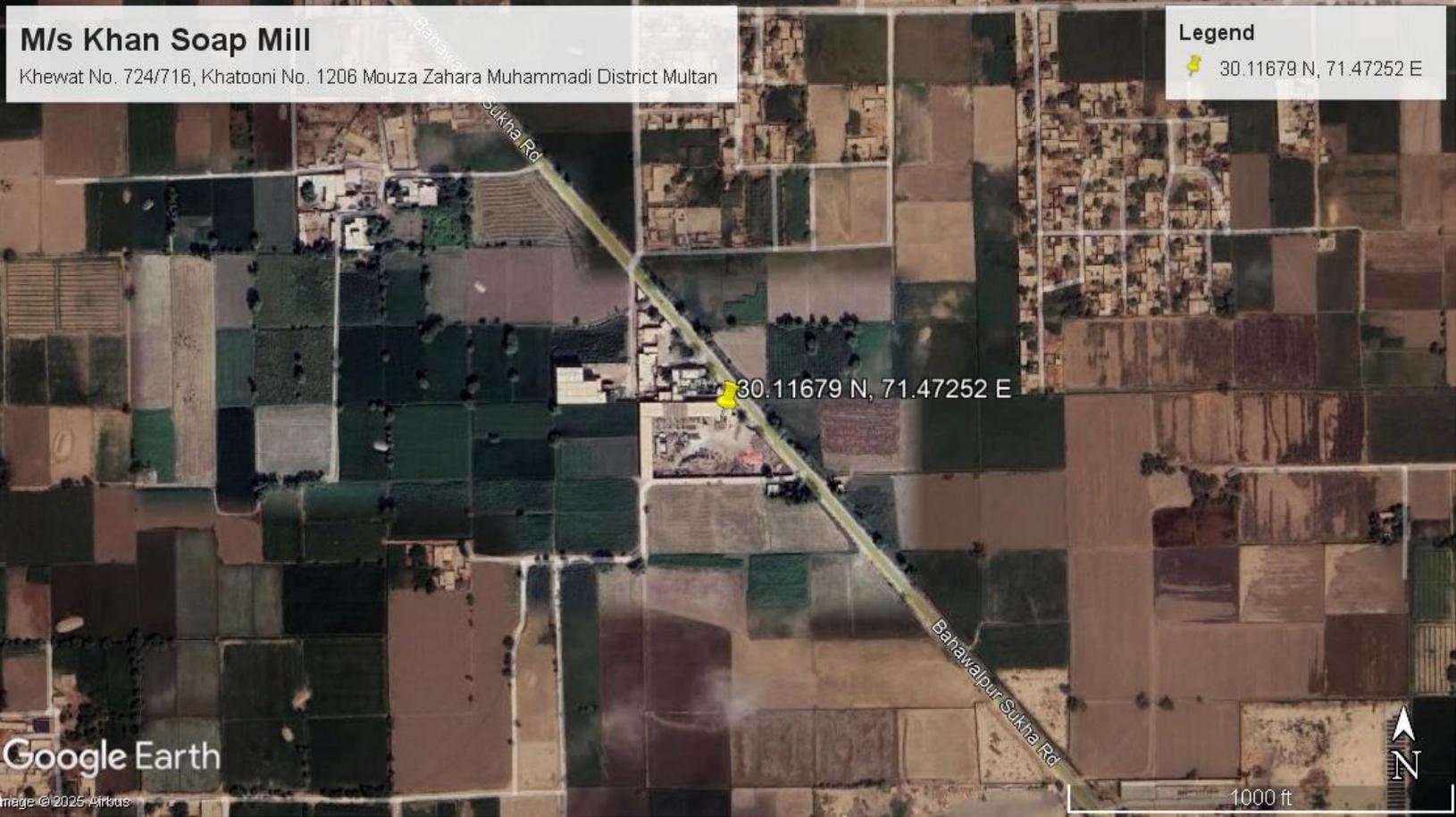
5.4 Land Use of the Site

The selected land is commercial. Its status and location make it fully compatible with the development, in line with existing land use policies. This not only simplifies the approval process but also minimizes any potential impact on nearby communities.

5.5 Road Access

The project site is easily accessible via the Bahawalpur sukha road, providing convenient access for operational activities. This accessibility is essential for the smooth transportation of raw materials, products, and for employee commutes to and from the site. The well-maintained road network ensures minimal transportation delays, supporting the project's efficiency and overall productivity. Furthermore, road access is vital for quick distribution to local markets, enhancing supply chain operations. A road access map has been provided, offering a detailed overview of the site's connectivity and highlighting its strategic location for efficient logistics and seamless transportation operations.

Figure 2 Project Location



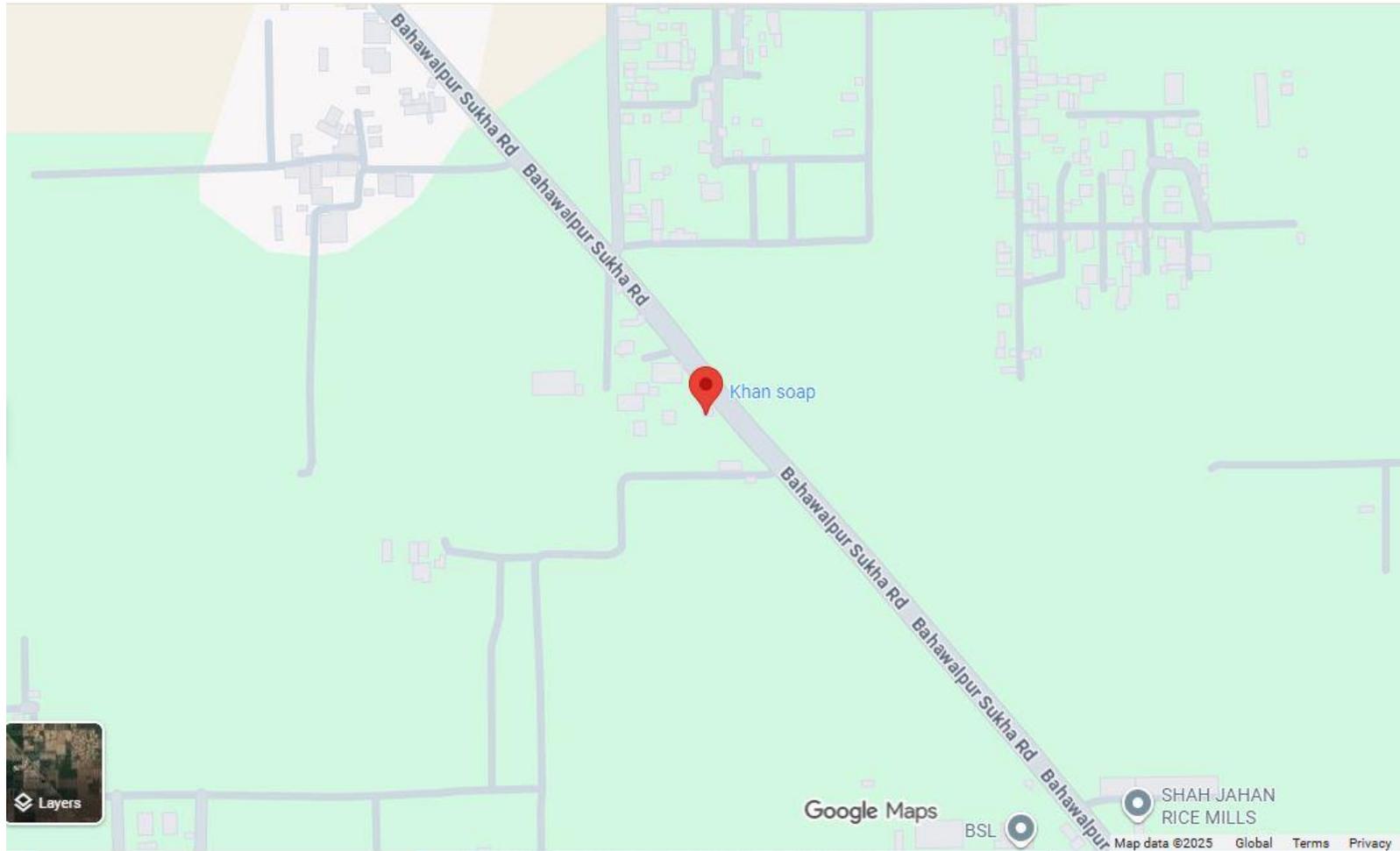


Figure 3 Road Map

5.6 Vegetative Features of the Site

The area surrounding the project site is primarily open land, with some green patches scattered throughout. In line with the project's commitment to sustainable development, plans are in place to establish green belts around the site during its operational phase. These green belts will not only enhance the aesthetic appeal of the site but will also serve vital environmental functions. They will act as natural buffers to reduce pollution, particularly from vehicular emissions, and help mitigate noise pollution originating from the unit.

5.7 Plantation Plan

To further enhance visual appeal and improve ambient air quality, the project will implement a plantation plan that includes the planting of approximately 200 to 500 plants within and around the project area's vicinity. The selection will focus on a variety of plants, including ornamental species like Coreopsis and daylilies, alongside a strong emphasis on planting shade-providing trees. This initiative aligns with the project's environmental sustainability goals, aiming to create a greener, more pleasant environment that will benefit both the local ecosystem and the surrounding community.

5.8 Magnitude & Cost of the Project

The project cost is approximately 60 million PKR. This investment will cover the costs related to the procurement of equipment, construction, raw materials, and the operational expenses necessary for the functioning.

Table 4 Cost Breakdown

Amenities	Cost in PKR
Land cost	30 million
Infrastructure development & Machinery cost	23 million
Air emissions, Waste water and Solid waste management	05 million
EMMP & Landscaping & Tree plantations	02 million
Total Cost	60 million

5.9 Schedule for implementation (Tentative)

- ❖ **Stage I:** The clearing of land, and preparation of land for construction activity.
- ❖ **Stage II:** During this phase, machinery will be brought to the site and installed.
- ❖ **Stage III:** In this phase all the outstanding activities will be completed, and construction activities will be initiated.
- ❖ **Stage IV:** After completing construction, employees will be hired, and staff will be assigned their respective work. The operation activities will be initiated.

Table 8 Schedule of Implementation

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

5.10 Project Description

The proponent intends to take environmental approval of the said project from Environment Protection Agency (EPA) in order to comply with all the rules and regulations. The name of the project is M/s Khan Soap Mill located at Khewat No. 724/716, Khatooni No. 1206 Mouza Zahara Muhammadi District Multan. The project involves the soap production over an area of 62572.739 SFT. The total cost of the said project is 60 million PKR.

5.10.1 Process Description

The basic detail regarding the process is:

1. Raw Material Handling

The main raw materials include oils/fats (tallow, palm oil, cottonseed oil), caustic soda (alkali), sodium silicate (filler), and additives such as colorants and fragrance. Raw materials are stored in designated storage tanks or containers before processing.

2. Saponification

Oils/fats are reacted with caustic soda solution in a saponification kettle or crutcher under controlled heating. This reaction produces soap mass and glycerin.

3. Mixing and Homogenization

The soap mass is cooled and blended with fillers (sodium silicate, sodium carbonate, or clay) and other additives to improve hardness, reduce cost, and enhance performance.

4. Extrusion / Plodding

The homogenized soap material is fed into a plodder or extruder, which compacts and shapes the soap into continuous bars.

5. Cutting and Stamping

The extruded soap bars are cut into required sizes and stamped with brand markings using a cutter and stamping machine.

6. Drying and Cooling

The finished soap cakes are dried and cooled in a controlled environment to attain the required hardness and stability.

7. Packaging

After cooling, the soaps are wrapped and packaged for storage and distribution.

List of machinery:

- Saponification Kettle / Crutcher
- Soap Mixing Machine
- Vacuum Plodder / Extruder
- Cutting Machine
- Stamping / Printing Machine
- Packaging / Wrapping Machine

5.11 Available Facilities

i. Firefighting System

The firefighting equipment/system has been designed and will be implemented in project. Fire extinguisher has been provided in site.

ii. Water Facility

The source of water for the site is ground water at the depth of 70-100 ft.

iii. Power requirement / power source

The main source of electricity/electric power will be Water & Power Development Authority (WAPDA).

iv. Personal Protective Equipment

Following Personnel Protective equipment will be provided to the workers for their safety during construction and operational phase as per the requirement of specific activity:

- Protective Goggles

- Protective leather/rubber shoes
- Gloves
- Face masks
- Protective shields
- Helmets
- Overcoats

5.12 Restoration and Rehabilitation at the end of Project Life

The estimated lifespan of the project is approximately 25 years. However, well before reaching the end of its first lifecycle, the project will undergo complete renovation and refurbishment. Modern and advanced equipment will replace outdated machinery, ensuring efficiency and sustainability. Additionally, all civil structures and related infrastructure will be extensively renovated to maintain operational standards.

All restoration activities will be conducted in compliance with prevailing environmental management laws to prevent any harm to the environment or human health. Given the planned refurbishment and modernization, rehabilitation of the site will not be required.

5.13 Government Approvals and Leases

In accordance with Section 12 of the Punjab Environmental Protection (Amendment) Act, 2012, approval from the Environmental Protection Agency (EPA), Government of Punjab, Lahore, is mandatory before project construction begins. Therefore, this Environmental Impact Assessment (EIA) report has been prepared for submission to EPA Punjab.

5.14 Health, Safety & Hygiene

5.14.1 First Aid Facility

Workers and employers will be trained in first aid treatment to handle emergencies effectively.

5.14.2 Safety Training

All workers and staff will receive proper training on workplace safety measures and best practices.

5.14.3 Use of Drugs and Narcotics

The use of drugs and narcotics is strictly prohibited in the workplace.

Smoking will only be permitted during designated break times in isolated smoking areas.

5.14.4 Fire Protection System

- Firefighting arrangements will be in place at the project site.
- Fire extinguishers and firefighting equipment will be positioned at easily accessible, clearly marked locations.
- A first aid box will be provided at the site to handle injuries promptly.

5.14.5 Security Measures

The project site will be fully secured with a boundary wall and round-the-clock security guards. These measures will help ensure the safety of the site and its surrounding areas.

5.14.6 Safety Signs and Boards

Safety signs and symbols play a crucial role in preventing workplace accidents. Signs must be in a clear and understandable language for all workers. Workers will be trained to recognize and understand safety signs. Each department will provide safety signs and boards to protect employees from workplace hazards. Safety signs will be color-coded to enhance recognition and understanding. At this project site, safety signs and boards will be installed in key locations to minimize risks and promote a safe working environment.



Figure 3 Safety Sing & Symbol

6 DESCRIPTION OF ENVIRONMENT

An Environmental baseline data study is essential while preparing EIA reports. The basic purpose is to establish a clear understanding of existing environmental conditions in the project area and to identify potential impacts of the project. It refers to the collection of baseline information on biophysical, social, and economic aspects of project location.

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

- Physical Environment
- Ecological Environment
- Socio-Economic Environment

6.1 Physical Environment

This part examines the physical resources such as topography, soil, climate, surface and ground water resources and quality, ambient air quality and geology of not only the project site but also the city to assess whether the project under assessment can or does have any impact on any of these parameters. Multan is a city in the Punjab, Pakistan. The city consists of tehsils Multan Saddar, Jalalpur Pirwala and Shahabad and others. It is a well-known cotton-growing area. Its approximate height above Sea level is 500ft. The fauna and flora of the area include: Ukkan, Kikar, Beri, Jand, van, and Karil. No special species of animal worth mentioning are to be found. The demographic profile of the city shows that the total area of the district is 3,721 square kilometers (1,436 sq. mi). Its elevation is about 122

m. According to the Census 2017, the population is about 1.872 million. (Census Report 2017).

6.1.1 Geological Formation

This part examines the physical resources such as topography, soil, climate, surface and ground water resources and quality, ambient air quality and geology of not only the project site but also the city to assess whether the project under assessment can or does have any impact on any of these parameters. Development wise, it is more developed than the other tehsil of district Multan: Multan Saddar, Jalapur Pirwala and Shujabad. City became more famous nationally and internationally after the General Elections of 2013 when allegations of rigging were put by the Pakistan Tehrik-e-Insaaf in National Assembly Constituency NA-154.

6.1.2 Seismicity

Pakistan lies on an active seismic belt of earth. Seismic observations indicate that hundreds of shocks originate every year. Mostly, these seismic waves are of low intensity and do not have significant effect. According to seismic zones of UN- Habitat the project area falls under Zone 2A. The seismic zoning is shown in the figure.

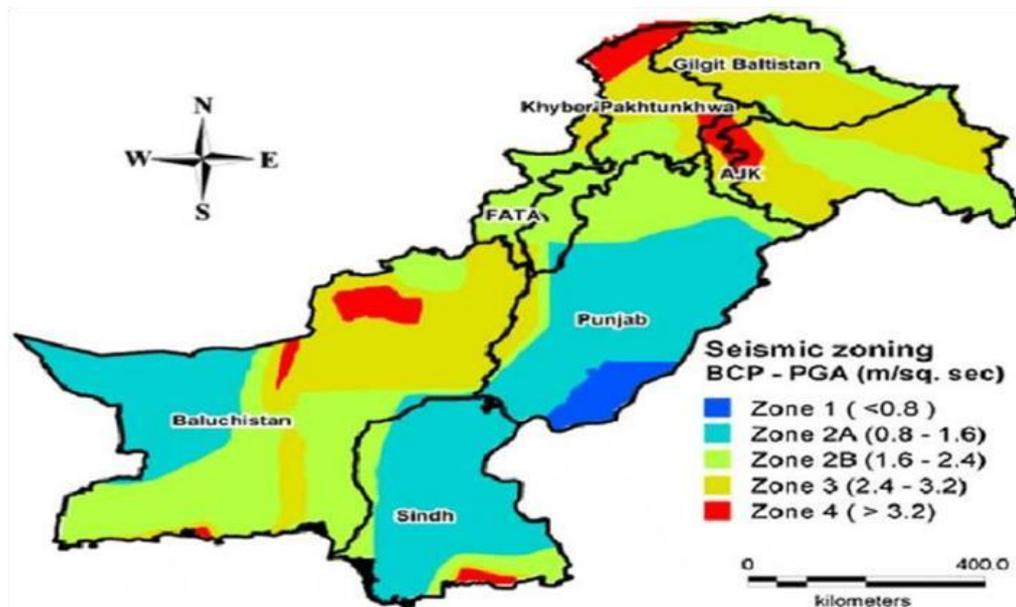


Figure 4 Seismic Zone of Pakistan

6.1.3 Climate

Climatically Multan is hot, arid, and very dry as it receives less than 125 mm of annual rainfall. May, June, and July are the hottest months and the mean maximum and minimum temperatures for these months are 42° C and 28 ° C respectively. Dust storms are a common occurrence in the city, and monsoon rain, from June to September, can be severe.

Table 9 Climate of Pakistan

Month	Mean temp. Max (Celsius)	Mean temp. Min (Celsius)	Precipitation (%)	Humidity (%)
January	19.7	5.0	33.8	66.2
February	21.6	7.7	50.0	60.0
March	26.0	12.5	60.5	53.8
April	33.0	17.7	36.5	41.8
May	38.1	22.0	31.8	32.5
June	40.5	25.8	51.6	37.8
July	35.7	25.8	23.3	67.8
August	34.4	25.3	22.2	70.8
September	35.0	23.0	77.7	65.5
October	33.1	16.6	12.2	55.6
November	27.8	9.9	9.9	62.7
December	21.5	5.7	30.4	68.9
Annual mean	30.6	16.4	36.6	56.4

6.1.4 Season and Rainfall

Rainfall also varies markedly and it's predictably not certain from year to year. A wet year may be followed by a dry year. Rainfall in the regions mainly occurs in July and August when the monsoon depression travels westward. Precipitation has marked seasonal fluctuation. The average annual rainfall based on the 32 years observation is 125 mm (4.921 inches), almost all of which occurs in the two months of July and August (Reference: The 2004 Baseline Survey on Millennium Development Goals in AACs, Pakistan).

6.1.5 Temperature

The project area is semi-arid and characterized by large seasonal variations of temperature. The summer season lasts from April to September with an average temperature of 31.25°C (88.25°F). The extreme maximum and minimum temperature in Summer being 48.0°C (118.4°F) and 9.0°C (48.5°F) respectively. During the winter months, the daytime temperature generally ranges between 19.4°C (67.02°F) to 33.9°C (93.02°F) and night temperatures are generally in the range of 4.8°C (40.64°F) to 17.7°C (63.96°F). Extreme minimum temperature sometimes reaches -2°C (28.4°F). It generally begins to be active from mid-December and tends to concentrate over this region. In the fold of these disturbances sometimes well marked cold fronts are formed. (Reference: The 2004 Baseline Survey on Millennium Development Goals in AACs, Pakistan).

6.2 Environmental baseline modeling

6.2.1 Noise Level

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

6.2.2 Ambient Air Quality

Atmospheric pollution means the imbalance in normal air chemistry. It can occur due to the addition of a new chemical into the atmosphere or by the change in concentration of the chemicals already existing in the atmosphere. Atmospheric pollution, particularly in urban areas has a strong impact upon daily life. The reasons for such changes can both be natural as well as anthropogenic. Ambient air quality is a key to measure the concentration of

the various chemicals in atmosphere; especially of the chemicals which pose detrimental effects on health, safety, and environment, to have a comparison with their safe concentrations, as established in WHO Standards and NAAQS.

6.2.3 Surface Water and Ground Water

There are no surface water resources like canals or ponds, near the project area. The area surrounding the project site is poorly drained. Ground water is the principal source of municipal water supply. This is also the case in the immediate vicinity of the site. The City's drinking water is obtained from groundwater aquifer by means of tube wells located throughout the area. Groundwater is pumped from 60-65 ft. feet and is generally good for direct consumption.

6.3 Ecological Environment

In this section, the baseline environmental conditions pertaining to biological environment are described. These conditions have subsequently been used to identify the potential impacts on the biological environment that are likely to arise from the project activities.

6.3.1 Flora

There are no natural forest trees, grassland, or ecologically important place. But the natural vegetation has been replaced by the agricultural crops. So, this sector consists generally of agricultural land irrigated by tube wells. Multan district is distinguished for its status in Agricultural production especially cotton and Mango. It has renowned Agricultural research institutes like i.e., Central Cotton Research Institute, Cotton Research Station, Mango Research Station, Agricultural College at Baha-ud-Din Zakria University.

Table 10 Fruiting Plant

Local Name	Fruiting Plant Specie
Mango	<i>Mangifera Indica</i>
Guava	<i>Psidium guajava</i>

Date Palm	<i>Phoenix dactylifera</i>
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Table 11 Plant Species

Local Name	Scientific Name
Kikar	<i>Acacia nilotica</i>
Sufaida	<i>Eucalyptus camaldulensis</i>
Albizia lebbeck	<i>Siris</i>
Peepal	<i>Ficus religiosa</i>
Tahli	<i>Dalbergia sissoo</i>
Beri	<i>Ziziphus nummularia</i>

6.3.2 Fauna

The project area, on account of the nature of vegetation and topography, is rich in vegetation and wildlife. Fauna of the project area consists of:

1. Mammals
2. Reptiles
3. Amphibians 4. Birds

Table 12 List of Fauna

Local Name	Species
Quail	<i>Coturnix coturnix</i>
Owl Pigeon	<i>Columbia Livia</i>
<i>Corvus splendens</i>	House Crow
Ranatigrina	Frog

6.4 Socio Economic Environment

The project site is in industrial land; hence direct disturbance to communities will be minimum from the project activities. However, the physical extent of the study area extends up to 5km surrounding the site (referred as project area) considering the physical, ecological, and socioeconomic boundaries beyond which the project is not likely to significantly influence local communities, and with a view of covering a substantial sample size for collection of reliable and authentic socioeconomic data.

6.4.1 Study Objectives

The socio-economic study undertaken for the Environmental Impact Assessment (EIA) was designed and conducted to meet the following objectives:

- To assess the human environment of the area i.e., to determine the Quality of life of communities within the Region of Influence.
- To have an insight into the day-to-day activities of people especially focusing on their income generating activities viz., agriculture and labor.
- To assess the vulnerabilities of the local communities and the effects of project activities on their Quality of Life and Consultation with communities regarding the project activities and to find out their concerns and aspirations.

6.4.2 Resettlement patterns

Different types of houses were observed in Multan during the survey i.e., katcha, pakka, semi pakka etc having poor drainage system. Most people live within the village, a few in their farmhouses (Deras) while some make their homes on their agricultural land. So, there is no formal pattern of settlements. Family composition of both the villages is dominantly joint family system but a few nuclear families also exist in the area. Both the villages have electricity and Sui-gas. People use groundwater obtained via hand-pumps for drinking purposes without any treatment.

6.4.3 Indigenous people

People inhabiting the project area are of different castes and races. Most of the families have been living here in these villages from 20 to 25 years which has led to homogeneity of culture and the development of a closed economy. There is no danger or damage or elimination of indigenous community as the locals are steeped in their customs and have no intention of relocating.

6.4.4 Religion, ethnic group, and Cast Patterns

99% communities of these villages are Punjabi speaking only 1% community belongs to other ethnic groups like Sraiki, Pashto etc. Religion plays an important role in the social structure of society. Sunni Muslims is primarily inhabiting these two villages except a few families of Ahl-e-tasheh and Ahl-e-Hadees also lives here.

6.5 Quality of Life Value

Overall, the social and physical infrastructure is not up to the mark in the project area. However, the project area is better compared to the other rural areas of the province. A brief account of the education, health, infrastructure, and markets of the area is as follows:

6.5.1 Education

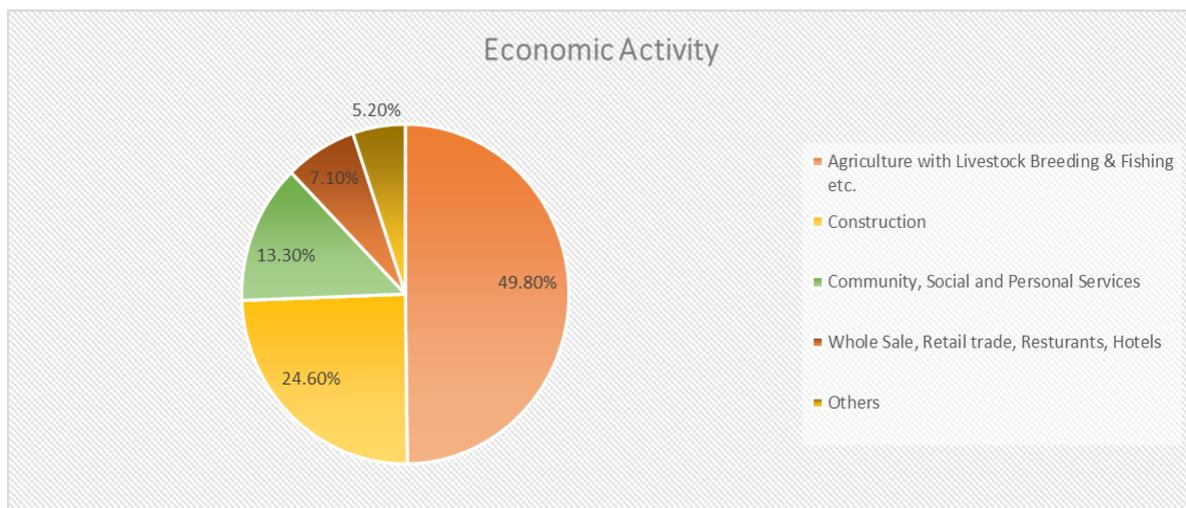
The level of literacy is low as compared to the literacy rate of the district Multan i.e., 45%. Average education of the community is Primary. Though there are higher secondary government schools, private sector schools and colleges for girls and boys are also available near the vicinity of the project area. People go to Multan and other cities of Pakistan for university education.

6.5.2 Health facility

Basic Health Unit, Dispensaries and Private clinics exist in the surrounding villages of the project area. People also have access to private hospitals in the city and sometimes to nearby private dispensaries. Fever, malaria and chest congestion, Hepatitis-C were reported as the common diseases of the project area. In the project area, health conditions are much developed.

6.5.3 Economy of Area

District Multan is an industrial and commercial city having multi occupations. The population of the area has different occupations including government and private services as well as agriculture. The women also assist their men in the economic activity in different fields of business, service, education, and other institutions. Women mostly serve in schools, colleges, and hospitals. Multan is generating many employment opportunities for its locals and outsiders. Industrial areas are using manpower, while nearby towns are providing business opportunities to the residents. In this semi urban area, people are involved in daily wages jobs, while some are involved in small business. They normally travel to adjacent areas for work. Some work in the industrial area and in the surrounding universities and colleges. People are also involved in agriculture. Area having access to irrigation water is another source of income. Similarly, livestock is a secondary source of income. It is safe to assume that livestock farming is practiced uniformly in both types of areas. The economy of the project area is dependent primarily on two occupations, i.e., agriculture (maximum) and livestock (limited extent), while some locals are also involved in manual labor.



6.5.4 Agriculture

Agriculture is one of the most important economic activities in the project area. Major crops of the area are:

In Rabi: Wheat, Fodder, and some seasonal vegetables

In Kharif: Rice, Sugarcane, Fodder and Seasonal Vegetables

Irrigation in the area is primarily sustained through tube-well irrigation.

Canals are the major sources of water supply for irrigation in the area.

6.5.5 Livestock

Livestock ownership has also developed in the project area; especially among poor families who sell animals during emergency days as mostly unemployed people depend on livestock and sometimes agriculture. People have livestock which include cows, goats, sheep, and donkeys. All the animals are native breeds. Milk and butter from the livestock are consumed by the household and are sometimes sold in the market.

Good breeds of buffaloes and cows are found in the project area. Goats, horses, asses, and mules are also part of the livestock in these villages.

7 IMPACT ASSESSMENT METHODOLOGY

This section discusses the potential environmental impact for the establishment of M/S Khan Soap Mill. The impacts may include soil contamination, water resources depletion, biological resources disturbance and socio- economic impacts and, where applicable, identifies mitigation measures that will reduce significantly, if not eliminate, its adverse impact. The assessment conducted in this Section is based on potential impacts on overall environmental receptors within the project area.

- To find different alternatives and ways of conducting the project activities, this may cause adverse environmental and social impacts on the surroundings.
- To enhance the Environmental and Social benefits of project.
- To avoid, minimize and remediate adverse impacts.
- To ensure that residual adverse impacts are kept within acceptable limits.

It includes the magnitude, the extent of the impact and the nature of the anticipated impact that is likely to be occurred from the proposed project activity.

7.1 Methodology

This section discusses the project's potential environmental impacts due to the proposed project. The adverse impact may occur on; the area's geomorphology, soil, water resources, air resource, biological resources, and socio-economic condition and where applicable, identifies mitigation measures that will reduce significantly, if not eliminate, its adverse impact. The assessment carried out in the sub-sections below is based on potential impacts on overall environmental receptors within the project area. Impacts are evaluated on the basis of magnitude, immediacy and sustainability.

There are various methods for Impact assessment such as listed below:

1. Checklists
2. Matrices

3. Networks
4. Overlays
5. GIS and computer expert systems

The method used to evaluate the impacts of proposed project is **Checklist Method**. This method has been used to identify the significance and magnitude of the impacts as well as the nature, reversibility, and extent. The impact assessment done based on project phases from construction to operation. In checklist method, the impacts are tabulated in the form of cells. This method has been used to identify the significance and magnitude of the impact as well as the nature, reversibility, and extent. The impact assessment done based on project phases from construction to operation.

7.2 Characteristics of Impacts

The impact analysis is characterized as following:

- Positive and Negative Impacts
- Long- and Short-Term Impacts
- Direct and Indirect Impacts
- Continuous and Intermediate Impacts
- Wide and Local Impacts
- Large, moderate, and minor Impacts

IMPACTS DURING CONSTRUCTION PHASE

Basic Components	Impact Characteristics												
	Duration		Location		Frequency		Extent		Significant			Nature	
	Long	Short	Direct	Indirect	Continuous	Intermediate	Wide	Local	Large	Moderate	Minor	Positive	Negative
Soil Erosion		*		*		*		*			*		*
Air Quality		*	*			*		*			*		*
Ground Water Quality		*	*		*		*		*				*
Noise Level		*	*			*		*			*		*
Wastewater Generation	*		*		*		*		*				*
Solid Waste	*		*		*			*		*			*
Aesthetic		*		*		*		*			*		*
Flora		*		*		*		*			*		*
Fauna		*		*		*		*			*		*
Employment Rate		*	*			*	*			*		*	
Economic Uplift		*	*			*	*			*		*	
Health and Safety		*	*			*		*			*		*

IMPACTS DURING OPERATIONAL PHASE

Basic Components	Impact Characteristics												
	Duration		Location		Frequency		Extent		Significant			Nature	
	Long	Short	Direct	Indirect	Continuous	Intermediate	Wide	Local	Large	Moderate	Minor	Positive	Negative
Soil Erosion		*		*		*		*			*		*
Air Quality		*	*			*		*			*		*
Ground Water Quality	*		*		*		*			*			*
Noise Level		*		*		*		*			*		*
Wastewater Generation	*		*		*		*		*				*
Solid Waste		*	*			*		*		*			*
Odor	*		*		*		*		*				*
Aesthetic		*		*		*		*			*		*
Flora		*		*		*		*			*		*
Fauna		*		*		*		*			*		*
Economic Uplift	*		*		*		*		*			*	
Employment Rate	*		*		*		*		*			*	
Health and Safety		*	*			*		*		*			*

8 Potential Environmental Impacts and Mitigation measures

This chapter provides a review of the potential impacts by the M/s Khan Soap Mill, located at Khewat No. 724/716, Khatooni No. 1206 Mouza Zahara Muhammadi District Multan, which could occur because of the project activities. These impacts could be both positive and negative in nature and have been classified accordingly by a thorough review of the construction and operational phases of the project. This assessment numerates the magnitude of these impacts with the aid of environmental matrices and presents effective mitigation measures to counter their adverse nature.

8.1 Purpose of Environmental mitigation measures

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

1. What is the problem?

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

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

The problems that would occur fall within the project premises, and near the boundaries of the project location. The impacts would range up to the distance where project related activities are performed or up to the geographical zone where the effects spread. Impacts would show their presence soon after the project development starts.

3. Where the problem should be addressed?

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

4. How should the problem be addressed?

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

8.2 Potential Environmental Impacts and Mitigation Measures due to project location

The location is away from the residential area and also from the water body. There will be no enduring, high and adverse impact predicted due to the establishment of the project at this location. The selected site does not fall in the sensitive area. Moreover, the area is not inhabited by any ecologically important or protected flora and fauna specie as well as within 500-600 m vicinity of the project area. There is no archaeology and historically important site located.

8.3 Potential Environmental Impacts and Mitigation Measures due to project design

The design of a Khan Soap Mill located at Khewat No. 724/716, Khatooni No. 1206 Mouza Zahara Muhammadi District Multan, may lead to environmental concerns such as land degradation, water contamination, air pollution, noise disturbances, and waste accumulation. Improper waste disposal can impact water quality, while ammonia emissions and dust may affect air quality. However, these impacts can be mitigated by implementing efficient waste management systems, biosecurity measures, water conservation techniques, and renewable energy sources such as solar power and biogas. Establishing proper drainage, ventilation, composting, and tree buffers can help minimize environmental harm. With a well-planned design and sustainable practices, the unit can operate efficiently.

8.4 Potential Environmental Impacts and Mitigation Measures due to construction phase

The construction phase of the M/s Khan Soap Mill located at Khewat No. 724/716, Khatooni No. 1206 Mouza Zahara Muhammadi District Multan, could result in various environmental impacts, including soil degradation, dust emissions, noise pollution, water contamination, and waste generation. These impacts effectively managed to ensure minimal disruption to the

environment and surrounding communities. Below are the key potential impacts and their corresponding mitigation measures that has been implement during the construction of the project:

8.4.1 Soil Degradation and Erosion

Potential Impact:

Land clearing, excavation, and leveling will lead to soil erosion and loss of topsoil fertility. Heavy machinery movement will cause soil compaction, reducing groundwater infiltration.

Mitigation Measures:

Excavation will be limited to the required area, avoiding excessive land disturbance. Topsoil will be stored separately and reused for landscaping or mill boundaries. Erosion control measures like tree plantation, vegetation barriers will be implemented.

8.4.2 Air Pollution and Dust Emissions

Potential Impact:

Dust from excavation, material handling, and vehicular movement will deteriorate air quality. Emissions from construction machinery and generators will contribute to air pollution.

Mitigation Measures:

Water will be sprinkled regularly on dusty surfaces to minimize dust emissions. Covered trucks will be used to transport construction materials and reduce airborne dust. Construction equipment will be maintained properly to minimize emissions, and low-emission machinery will be preferred.

8.4.3 Noise Pollution

Potential Impact:

Construction activities, machinery operation, and material transportation will generate high noise levels, disturbing nearby communities and livestock.

Mitigation Measures:

Construction work will be restricted to daytime hours to minimize disturbances. Noise barriers, such as temporary walls or tree plantations, will be established around the construction site. Machinery will be regularly maintained to reduce noise levels.

8.4.4 Water Contamination and Wastewater Generation

Potential Impact:

Runoff from construction activities will carry sediments, oils, and chemicals, contaminating nearby water sources. Improper disposal of construction waste and wastewater will degrade water quality.

Mitigation Measures:

Drainage channels will be constructed to direct runoff away from water bodies and agricultural fields. Sediment traps will be installed to prevent soil erosion into nearby streams or groundwater. Construction waste will be disposed of properly, and biodegradable or eco-friendly materials will be used where possible.

8.4.5 Construction Waste and Debris Management

Potential Impact:

Uncontrolled disposal of construction materials like cement, bricks, wood, and plastic will lead to land pollution.

Mitigation Measures:

Construction waste will be segregated into recyclable and non-recyclable categories. Materials like bricks and wood will be reused where possible to reduce waste generation.

8.4.6 Occupational Health and Safety Risks

Potential Impact:

Construction workers will face risks like injuries, exposure to dust, and heat stress. Lack of proper safety measures will lead to accidents and health hazards.

Mitigation Measures:

Personal protective equipment (PPE) such as helmets, gloves, and dust masks will be provided. Workers will be trained on health and safety protocols. First-aid kits and emergency response plans will be made available on-site.

8.5 Potential Environmental Impacts and Mitigation Measures Due to Operational Phase

The operational phase of the Khan Soap Mill will have several environmental impacts. Below are the key potential impacts and their corresponding mitigation measures:

The operational phase of the products manufacturing facility will bring about several environmental impacts, alongside strategies to mitigate these effects effectively.

8.5.1 Impact on Air Quality Potential Issues:

Air emissions may arise during soap production from boilers, furnaces, and material handling (chemicals, perfumes, and powders), which can release suspended particulate matter and odorous compounds. Vehicle movement for raw material and product transport will also contribute to dust and exhaust emissions.

Mitigation Measures:

Install appropriate air pollution control equipment such as scrubbers, filters, or cyclones on production units and boilers. Adopt regular water sprinkling on unpaved areas to control dust. Maintain vehicles and generators to minimize exhaust emissions. Develop a greenbelt around the factory boundary to improve air quality and commit to planting 3–5 native trees for every tree removed. Ensure proper ventilation systems within production areas to capture and treat emissions.

8.5.2 Impact on Noise

Potential Issues:

Operation of mixers, cutters, stamping machines, and packaging units may generate continuous noise, which could disturb workers and nearby residents. Vehicle movement may also add to noise levels.

Mitigation Measures:

Develop a thick greenbelt around the factory to act as a noise buffer. Install sound-insulated enclosures around noisy machinery and use vibration-damping foundations where possible. Ensure regular maintenance of machinery and vehicles. Provide workers with earplugs/earmuffs in high-noise areas.

8.5.3 Solid Waste Management

Potential Issues:

Solid waste will mainly include packaging material (cartons, plastics), rejected soaps, and domestic refuse from the factory. Improper disposal of chemical residues, used oils, and cleaning materials could lead to environmental hazards.

Mitigation Measures:

Implement waste segregation at source with separate bins for recyclables, organics, and hazardous waste. Optimize packaging design to reduce material use and implement recycling programs for cartons and plastics. Rejected soap pieces can be reprocessed where feasible. Hazardous or chemical waste will be disposed of as per regulatory guidelines through certified vendors. Domestic solid waste will be collected and handed over to the municipal authority or licensed contractors.

8.5.4 Impacts of Wastewater Potential Issues:

Wastewater will be generated from domestic use (washrooms, canteen) and from cleaning of equipment and floors. This wastewater may contain soap residues, oils, and chemicals, which if not treated, could pollute soil or nearby water bodies.

Mitigation Measures:

Develop an internal drainage system and treat wastewater through a small-scale Effluent Treatment Plant (ETP) or septic tank before disposal. Ensure treated water meets Punjab Environmental Quality Standards (PEQS).

Introduce water-saving fixtures and recirculation systems to minimize consumption. Promote water reuse where possible for non-potable uses such as landscaping.

8.5.5 Health & Safety of Workers Potential Issues:

Workers may be exposed to chemicals (caustic soda, perfumes, colorants) used in soap making, leading to risks such as skin irritation, burns, or respiratory issues. Physical hazards may also occur due to machinery operation.

Mitigation Measures:

Provide regular training to workers on occupational health, chemical handling, and emergency preparedness. Ensure the use of Personal Protective Equipment (PPE) such as gloves, masks, goggles, and safety boots, with strict compliance monitoring. Install emergency showers and eyewash stations in chemical handling areas. Develop clear incident reporting protocols and ensure availability of first aid and firefighting equipment on site. Conduct periodic medical checkups of workers.

8.5.6 Impact on Flora and Fauna

Potential Issues:

The presence of common trees and animals in the area suggests a need to minimize ecological disturbance.

Mitigation Measures:

Post-construction tree planting and measures to avoid unnecessary habitat damage will help preserve local flora and fauna.

8.6 Environmental Enhancement Measures

The implementation is designed with strong emphasis on environmental stewardship and safety. To mitigate potential environmental impacts and promote a safe, healthy workplace, the project will incorporate the following enhancement measures during both the construction and operational phases:

The project will be installed with all precautionary measures to enhance and save the environment. The following necessary measures will be adopted during construction and operation:

- ✦ At the workplace workers and employers have enough information, knowledge, and training regarding first aid treatment in case of any emergency. The project provides proper medical facilities to workers and staff to cope with any incidental accidents and tackle them.
- ✦ Drugs and narcotics are strictly prohibited during working hours in working areas.
- ✦ The staff/attendants of the machinery will use proper protective gear.
- ✦ Sprinkling water will be done on dusty roads and tracks.
- ✦ PPEs will be provided during construction activity.
- ✦ Constructional waste and domestic solid waste will be disposed of or utilized properly.
- ✦ Local people will be informed in advance when work is about to start in an area.
- ✦ Machinery will never be left unattended.
- ✦ Efforts should also be made to discuss traffic conditions so that regular traffic is not disturbed. Transporters engaged in the project would be forced to adhere to the load specifications of the access road. No overloading would be allowed in any case.
- ✦ Safety signs and boards will be placed during construction.
- ✦ Proper SOPs will be followed with a proper schedule along with the HSE conditions.
- ✦ The area will be restored with native plants. A proper tree plantation plan will be formulated to save the environment.
- ✦ Solid waste will be handed over to contractors and an agreement will be made.
- ✦ Noise will be controlled by adopting proper measures.
- ✦ Safety signs will be placed at all locations where required.
- ✦ First aid facilities will be made available.

9 ENVIRONMENTAL MANAGEMENT AND MONITORING PROGRAM

This chapter provides a detailed environmental management plan and strategies. The objective of the Environmental Management Plan (EMP) is to address all the major environmental issues and provide a framework for the implementation of the proposed mitigation measures during the operational phase of the project.

9.1 Objective of Environmental Monitoring Plan

The objectives of the EMMP are multi-faceted, focusing on the comprehensive management of environmental aspects associated with the project:

- ✦ Defining Roles and Responsibilities
- ✦ Mitigation Measures
- ✦ Monitoring Mechanism
- ✦ Communication and Documentation
- ✦ Training and Capacity Building
- ✦ Management and Implementation

By addressing these objectives, the EMMP serves as a comprehensive guide for the project team to not only comply with regulatory requirements but also to adopt best practices in environmental management. This proactive approach to environmental protection will help to minimize the project's ecological footprint, promote sustainability, and contribute positively to the local community and environment.

9.2 Environment Management and Monitoring Plan (EMMP)

Table 5 EMMP

ENVIRONMENT MANAGEMENT AND MONITORING PLAN				
S. #.	IMPACT	MITIGATION MEASURE	RESPONSIBILITY	
			IMPLEMENTATION	MONITORING
A	CONSTRUCTION PHASE			
1.	AIR QUALITY			
	Dust, SO ₂ , NO _x & CO emissions from trucks, cause health issues to workers. Particulate matter will be generated during the Construction.	<ul style="list-style-type: none"> Spray by water trucks to minimize the dust. Maintenance of construction machinery should be made mandatory to reduce emissions. Haul-trucks carrying earth, sand, aggregate and other materials will be kept covered with tarpaulin to reduce dust pollution. 	Contractor	Proponent
2.	NOISE			
	The impact of noise generated during construction	<ul style="list-style-type: none"> Engines of vehicles visiting project site should be properly tuned-up. The green zone of plants will also help decrease sound levels. 	Contractor	Proponent
3.	OCCUPATIONAL HEALTH & SAFETY			

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	There will always be the possibility of hazard to health and safety of workers to occur during construction stage, lying of piles, and machines installation.	<ul style="list-style-type: none"> • First aid facilities should be readily available for the workers at the site. The contractor will ensure the availability of transport and driver to handle any mishap which may occur. • Relevant safety devices like belts, gloves and testers should be strictly used by the Labor force at the work site. • Implement training programs that support the achievement of the staff and personnel's competency in relation to HSE. 	Contractor	Proponent
4. DISPOSAL OF CONSTRUCTION DEBRIS				
	Each phase of the development shall produce solid waste, disposal of which, if not managed properly could have negative impacts on the site and surrounding area.	<ul style="list-style-type: none"> • A site waste management plan should be made the responsibility of the contractor. The waste should be properly segregated and separated to encourage recycling of some useful waste materials. • Train or educate the involved stakeholders on the importance and means of waste management and handling. 	Contractor	Proponent
5. GROUND WATER QUALITY				
	No appreciable impacts on the ground water quality are anticipated.	<ul style="list-style-type: none"> • Avoid accidental spills through good work practice. 	Contractor	Proponent

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6. SOIL CONTAMINATION				
	Any improper storage or handling of materials including paints, fuels, oil, cement, etc. would result in soil contamination.	<ul style="list-style-type: none"> The contractor should be required to impart proper training to their workforce in the storage and handling of materials 	Contractor	Proponent
7. FLORA & FAUNA				
	No negative impact on the ecological environment will take place on account of cutting of any trees in the project area and clearing of vegetation from the site.	<ul style="list-style-type: none"> Trees and ornamental plants shall be planted along the project boundary which will increase the aesthetic value of the site and will combat pollution. Landscaping is deemed to be a powerful mitigation activity with a positive impact. 	Contractor	Proponent
8. SOCIO-ECONOMIC ENVIRONMENT				
	Several categories of employees will be required during the construction phase. This would have a positive impact on the local economy and on regional unemployment.	<ul style="list-style-type: none"> The socially responsible attitude of the project management towards local people and resources can make project people friendly. Awareness and educational programs introduced by the project management can reduce the fear among the people regarding non-skilled people. 	Contractor & Proponent	SIE
B. OPERATIONAL STAGE				
1. AIR QUALITY				

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	Air pollution is due to transport and vehicle & machinery.	<ul style="list-style-type: none"> • Proper maintenance and tuning of the vehicles & machinery can reduce it. 	Proponent	EPA
2.	NOISE QUALITY			
	Noise due to movement of vehicles, during traffic of materials	<ul style="list-style-type: none"> • Plantation along with boundary will make buffer zone to avoid noise. 	Proponent	EPA
3.	OCCUPATION, HEALTH, AND SAFETY			
	There will always be the possibility regarding hazards to health and safety of workers to occur during the operational phase of the project.	<ul style="list-style-type: none"> • All the workers involved in the transport of the materials will be suggested to wear boots, gloves, safety cap to avoid injury. • Plantation of trees along the boundary walls will help in reducing the noise levels to enough extent. All the vehicles should be properly tuned up and regular maintenance and periodic monitoring must be done. 	Proponent	EPA
4.	SOLID WASTE			
	The solid waste may negatively impact the site, the workers, the visitors, and the factory surrounding in different ways including aesthetically, occupationally as well as from health, safety, and environment point of view.	<ul style="list-style-type: none"> • Domestic solid waste will be collected in waste bins. • Must use protective gloves while carrying the containers to avoid any hazardous effect. 	Proponent	EPA
5.	WASTEWATER QUALITY			

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	Domestic wastewater will be produced.	<ul style="list-style-type: none"> • Domestic wastewater will be disposed of after treatment through septic tank. • Wastewater will meet PEQS. 	Proponent	EPA
6. WATER QUALITY				
	Due to mixing of contaminant sedimentation, will cause pollution. Water quality decreases.	<ul style="list-style-type: none"> • Septic tanks will be installed for the treatment of wastewater. • No excess water will be extracted 		
7. FLORA AND FAUNA				
	Excessive plantation shall be done on the walls.	<ul style="list-style-type: none"> • The process of plantation should be kept sustainable throughout project life. 	Proponent	EPA
8. SOCIO-ECONOMIC ENVIRONMENT				
	A few employees will be required in the operational phase, and this would have a positive impact on the local economy and on regional unemployment.	<ul style="list-style-type: none"> • The management of the project can capitalize the positive attitude of people of the study area towards this project by offering them maximum employment opportunities. • Measurements and steps should be taken to keep undisturbed the privacy of adjoining workplaces. 	Proponent	EPA

9.3 Proposed schedule for implementation (Tentative)

- ❖ **Stage I:** The clearing of land, and preparation of land for construction activity.
- ❖ **Stage II:** During this phase, machinery will be brought to the site and installed.
- ❖ **Stage III:** In this phase all the outstanding activities will be completed, and construction activities will be initiated.
- ❖ **Stage IV:** After completing construction, employees will be hired, and staff will be assigned their respective work. The operation activities will be initiated.

Table 8 Schedule of Implementation

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

9.4 Environmental Budget

Table 6 Environmental Budget

Sr.no.	Environmental Components	Quantity	Pak. Rs.	Details/ Basis
1	Tree Plantation	500-1000	01 million	Cost includes plantation and maintenance up to three years
2	Solid Waste Management	L.S.	01 million	Lump sum
3	Wastewater management	L.S.	01 million	Lump sum
4	Health & Safety Measures	L.S.	01 million	Lump sum
5	Miscellaneous Cost	L.S.	0.9 million	Lump sum
6	Air Quality Monitoring	2	10,000	2 samples @ 5000/Sample
7	Water & Wastewater Quality Monitoring	2	10,000	2 samples @ 5000/Sample
8	Noise Level Monitoring	2	10,000	2 samples @ 5000/Sample
9	Soil Tests	2	10,000	2 samples @ 5000/Sample
10	Training		10,000	Lump sum
11	External Monitoring		50,000	Lump sum
	Total Environmental and Social Management Cost		Approx. 05 million PKR	

9.5 Environment Management Team

Responsibilities of Proponent

The project owner (proponent) will be responsible for the environmental management and supervisory affairs during the installation and operational phase of the project. Environment personnel designated by the management of project will look after the environment related issues during the operational phase. The responsibilities of environmental personnel are as follows:

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

Responsibilities of project contractor:

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

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

9.6 Monitoring Program to Assess Performance

Following functionaries will be involved in the implementation of EMP or to access output:

1. The project owner (proponent) as the project proponent and owner of the EMP.

2. Project excavation contractor(s) as executors of the EMP during installation phase of the project.
3. Transportation & Maintenance (O&M) and the health, safety, and environment team of the project as an executor of the EMP during the transportation phase of the project.

9.7 EMP Reporting and Review Procedure

Category	Impact	Project Activity	Monitoring Mechanism	Frequency	Monitoring Agency
Construction and Operational Phase					
Land Resource	Solid Waste	Implementation of Solid waste Management system	Record keeping and timely transfer of waste from bags to the disposal Site for disposal	Daily	Manager HSE/Project Proponent
	Soil Contamination	Implementation of Management Plan	Visual monitoring and complete soil analysis	Daily and annually	
Ecological	Flora	Uprooting of trees	Inventory of uprooted	During Baseline	
Air Resource	Air Emission	Dust emissions during Construction and Operation	Monitoring of the emissions as per applicable standards Water sprinkling will be done regularly to avoid dust emissions	Once before start of operation and after that as when required during operation	
	Dust				
Noise	Noise Pollution	Development/operational material transportation	As per applicable standards	Fortnightly	
Water Quality	Wastewater generation	Domestic wastewater, due to construction activities	Water quality testing	Monthly	
Health and Safety	Health risk	During construction and operational phase mainly due to more chemical usage	Keep record of workers as they use PPE's and follow safety signs and instructions	Daily	
Resource		During construction phase	Trees and vegetation during operation phase	Survey, once in a year and after the completion of the Project	

9.8 Training Schedule

Proponent provides periodic Environmental and HSE training to workers working in their existing plants. The management of Proponent feels HSE is important for moral, legal, and financial reasons. The management of proponent has developed strict SOPs for Health and Safety of workers. These SOPs include SOPs for Personal protective equipment's, Risk Assessment, permit to work, SOP for work at height, Fire Safety and Prevention, Confined Space entry etc. A comprehensive annual training calendar has also been developed for training on topics of HSE for management as well as labors. A training log will be maintained by Site engineer and contractors.

Participants	Date, Time & Location	Training Topics	Schedule	Responsible Authority
Staff of team management and contractor	As specified	<ul style="list-style-type: none"> • Introduction to the project and EMMP. • EMMP communication, documentation, monitoring, and reporting requirements. 	Every month	Project manager
All site personnel	As specified	<ul style="list-style-type: none"> • Site induction training on HSE system and requirements • Environmental sensitivities of the project area • Communication of environmental problems to corresponding officials • Waste disposal 	After every week	Project manager
Drivers	As specified	<ul style="list-style-type: none"> • Road safety • Road restrictions • Vehicle restrictions • Waste disposal. • Defensive driving 	After every 3 months	Project manager
Camp Staff	As specified	<ul style="list-style-type: none"> • Camp operations. • Waste disposal. • Good housekeeping 	Monthly	Project manager

10 STAKEHOLDERS CONSULTATION

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 build understanding by actively involving individuals, groups, and organizations, which have a stake in the project. This involvement increases the project's long-term viability and enhances its benefits to locally affected people and other stakeholders.

To evaluate the socioeconomic and environmental impacts, field 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 identify 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 pages.

10.1 Objective of Consultation

The objectives of public consultation in an Environmental Impact Assessment (EIA) report is to ensure transparency, inclusivity, and informed decision-making in the project planning process. Public consultation seeks to gather local knowledge, opinions, and concerns from affected communities and stakeholders, ensuring that their perspectives are considered in assessing potential environmental and social impacts. It aims to identify issues that may not be evident through technical assessments, promote community involvement, and build trust between project proponents and the public. Ultimately, the consultation helps to shape more effective mitigation measures, address stakeholder concerns, and enhance the social acceptance of the project.

The important general objectives of the consultation process in an Environmental Impact Assessment (EIA) are as follows:

- **Inform and Educate Stakeholders:** Provide stakeholders, including local communities and other relevant parties, with clear and accurate information about the project, its objectives, and potential environmental and social impacts.
- **Gather Local Knowledge:** Gain insights from stakeholders about local environmental, social, and economic conditions, which may help identify potential impacts that might not be apparent through technical analysis alone.
- **Identify and Address Concerns:** Understand the concerns, issues, and expectations of the affected communities and stakeholders to integrate them into the EIA process and ensure their inclusion in the decision-making process.
- **Promote Transparency and Accountability:** Foster an open and transparent dialogue between project proponents, regulatory bodies, and stakeholders, ensuring that the consultation process is inclusive and accessible to all relevant parties.
- **Enhance Project Design:** Use stakeholder feedback to improve project design, particularly with respect to environmental and social safeguards, ensuring the project minimizes harm and maximizes benefits.
- **Build Trust and Acceptance:** Create a sense of ownership and trust among stakeholders by actively involving them in the planning process, which can lead to greater acceptance of the project and smoother implementation.

Identify Mitigation Measures: Use stakeholder input to help identify more effective mitigation strategies and enhance the project's overall sustainability and social responsibility.

10.2 Methodology for consultation

Stakeholder consultation is a two-way flow of information and dialogue between the project proponent and stakeholders, specifically aimed at

developing ideas that can help shape project design, resolve conflicts at an early stage assist in implementing solutions and monitor ongoing activities.

Various techniques are used worldwide to carry out the stakeholder consultation that includes discussions, meetings and field visits. A series of scoping sessions and informal focus group discussions were carried out with local communities and local government representatives. The meetings were held at various locations. The consultation process followed these steps:

- **Field surveys:** The environmental team visited the project location and its surrounding areas to understand the socio-environmental setting.
- **Individual interviews:** One-on-one discussions were held with key informants such as farmers, locals and business owners.
- **Group discussions:** Separate focus group discussions (FGDs) were conducted for men and women to ensure inclusiveness and comfort in sharing concerns.
- **Informal gatherings:** Community elders were engaged through local *bethaks* (gathering places) and *mosques* to reach a consensus on general sentiment.
- **Documentation:** Feedback was documented using checklists and questionnaires, along with photographs (if permissible), ensuring clarity and transparency.

Information sharing: The project scope, duration, and key phases were explained in the local language using simple visuals and verbal briefings

10.3 Views, Concerns and Suggestions of Various Stakeholders

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

- Removal of shrubs and trees should be avoided, if any, to the extent possible in the case of clearance green zones should be established within the facility.

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

10.4 Proponent's Environment Management Team

Sr. No.	Managers	Responsibilities
1	Contract Manager	<ul style="list-style-type: none"> • Implementation of EMP • Environmental issues identification during pre-construction phase. • Communication EMP to all employees.
2	Contractor	<ul style="list-style-type: none"> • Ensure that the control measures identified during environmental surveys are implemented as they are relevant to their work/visit. • Ensure that the project management team is notified of any non-conformance of control measures or environmental incident where the environment has been put at risk.
3	Site manager	<ul style="list-style-type: none"> • Ensure site material and safe handling of hazardous waste. • Controlled access arrangement to avoid hazards. • Emergency arrangements to avoid any unfortunate incident. • First aid facilities/services should be available on-site. • Ensure good standards of workmanship.
4	Site HSE advisor	<ul style="list-style-type: none"> • Management plan to be followed and implemented. • Daily checks & weekly checks. • Regular consultation with workers.
5	Site Environment advisor	<ul style="list-style-type: none"> • According to legislation and consent develop EMP. • Ensure application of EMP. • Carry out regular site inspection.
6	Public Contact Officer	<ul style="list-style-type: none"> • First point of contact for members of the public. • Arrange and manage public forums. • Maintain relations with stakeholders. • Door to door surveys as appropriate. • Coordination with work.

10.5 The responsible Authority

Overall responsibility for implementation of EMP will be that of project proponent. He will appoint an HSE/Project Manager of relevant qualification. HSE/Project Manager will act as Environmental Manager and will manage all HSE condition at the PEQS.

10.6 Key Findings of Study:

The study findings depict that people perceive overall positive social impacts by development of the M/s Khan Soap Mill. Their attitude towards the construction of soap Mill facility development is highly positive with the expectation that locals are provided with jobs especially where unskilled labor is required. Majority of the people is convinced for positive sign for development in area and they correlate this change with the pace of their upward social mobility and progress. However, they want to carry out the project activities with proper mitigation measures.

11 Conclusion & Recommendations

11.1 Conclusion:

The Environmental Impact Assessment (EIA) of the project has been carried out in accordance with the Punjab Environmental Protection Act (PEPA), 1997 (Amended 2012). The assessment included detailed baseline data collection, impact analysis, stakeholder consultations, and the formulation of mitigation measures.

The project is expected to contribute positively to the socio-economic development of the area by creating employment opportunities, improving local services, and supporting related industries. However, like any development activity, it may also pose environmental and social risks, particularly during the construction phase, such as dust generation, noise, waste disposal, and safety hazards. During the operational phase, risks will depend on the nature of the processes involved (e.g., emissions, effluents, solid waste).

These impacts have been assessed as predictable and manageable, provided that the Environmental Management Plan (EMP) is implemented in full. No environmentally sensitive or protected areas were identified in the vicinity of the project site, and the majority of the concerns raised by local stakeholders have been addressed through design modifications and proposed mitigation measures.

Based on the findings of the EIA, it is concluded that the project is environmentally and socially feasible, and is not likely to cause any significant or irreversible adverse impact on the environment or public health if proposed measures are strictly implemented.

11.2 Recommendations

- Strictly implement the mitigation and monitoring measures outlined in the EMP during all phases of the project.

- Ensure compliance with best practices for noise and dust control, site safety, traffic management, and waste handling during the construction phase.
- Develop a robust waste management system for proper collection, treatment, and disposal of solid and liquid waste, especially during operation.
- Establish a system for regular environmental monitoring (air, water, noise, soil, etc.) and submit compliance reports to Punjab EPA as required.
- Maintain continuous communication with local communities through a designated Community Liaison Officer and grievance redress mechanism.
- Train staff and workers on environmental, health, and safety (EHS) protocols to minimize risks and improve compliance.
- Prepare and implement an emergency response plan tailored to site-specific risks such as fire, spills, or equipment failure.
- Ensure adherence to all relevant environmental, labor, and safety regulations of Pakistan.

In light of the above, it is recommended that the project may be granted Environmental Approval subject to the effective implementation of the proposed Environmental Management Plan.

GLOSSARY

Accommodate	(Of a building or other area) provide lodging or sufficient space for. "The cottages accommodate up to six people"
Assessment	The action of assessing someone or something. "The assessment of educational needs"
Aspects	A distinct feature or element in a problem
Adverse	Preventing success or development; harmful; unfavorable. "Taxes are having an adverse effect on storage"
Authorized	Having official permission or approval. "An authorized dealer"
Amendment	A minor change or addition designed to improve a text, piece of legislation, etc. "an amendment to existing bail laws"
Ambient Air	Ambient air quality refers to the quality of outdoor air in our surrounding environment. It is typically measured near ground level, away from direct sources of pollution
Archaeological	The scientific study of material remains (as fossil relics, artifacts, and monuments) of past human life and activities
Baseline	The existing conditions against which impacts of the proposed action and its alternatives can be compared.
Crushing	Deform, pulverize, or force inwards by compressing forcefully. "You can crush a pill between two spoons"
Containers	An object for holding or transporting something. "The cakes will keep for up to two weeks if kept in an airtight container"
Compliance	Acting according to certain accepted standards
Disposal	the action or process of getting rid of something
Dumped	Deposit or dispose of (rubbish, waste, or unwanted material), typically in a careless or hurried way
Effluent	Any material in solid, liquid, or gaseous form or combination thereof being discharged from industrial activity or any other source and includes a slurry, suspension or vapor
Environmental impact statement (EIS)	A document prepared to analyze the impacts on the environment of a proposed action and released to the public for review and comment. An EIS must meet the requirements of NEPA, CEQ, and the directives of the agency responsible for the proposed action.
Emission	The storage and discharge of something, especially gas, or radiation." The effects of lead emission on health"
Evaluated	Estimate or determine the nature, value, quality, ability, extent, or significance

Graded	Arranged in a sequence of grades or ranks; "stratified areas of the distribution"
Generation	The storage or creation of something
Inadequate	Not capable or competent; lacking
Implementation	The process of putting a decision or plan into effect; execution
Intends	To have in mind as something to be done or brought about, plan: to design or mean for a particular purpose, use, recipient, etc.
Landfill site	For the disposal of solid waste in which refuse is buried between layers of dirt to fill in or reclaim low-lying ground
Legislation	Law enacted by a legislative body
Mobilization	To release or make available, as cells or chemical substances
Mitigation	The action of lessening in severity or intensity
Noise	Loud, unpleasant, unexpected, or undesired sound that disrupts or interferes with normal human activities
Potential	Having or showing the capacity to develop into something in the future
Pedestrian	A person who goes or travels on foot; walker
Proponent	The person who proposes or intends to undertake a project
Sanitary	Relating to the conditions that affect hygiene and health, especially the supply of sewage facilities and clean drinking water
Segregate	Set apart from the rest or from each other; isolate or divide. "Disabled people should not be segregated from the rest of society"
Settlement	An official agreement intended to resolve a dispute or conflict. "Unions succeeded in reaching a pay settlement"
Ton	A short or net ton is equal to 2,000 pounds; a long or British ton is 2,240 pounds; a metric ton is approximately 2 to 205 pounds
Transportation	The action of transporting someone or something or the process of being Transported. "The era of global mass transportation"
Ultimate	Being or happening at the end of a process; final. "Their ultimate aim was to force his resignation"
Violations	the action of violating someone or something
Working place	From the out by side of the last open crosscut to the face
Flora	All the plant life in a particular region or period

Fauna	All the animal life in a particular region or period
Screening	The display of a motion picture
Smelting	extract (metal) from its ore by a process involving heating and melting
Regulations	An authorized rule
Recycling	process of converting waste materials into new materials and objects
Stakeholders	A person or organization with an interest or concern in something
Rehabilitation	The conversion of waste land into land suitable for use of habitation or cultivation

LIST OF ABBREVIATION

AA	Ambient Air
AOI	Area of Influence
CMS	Convention on Migratory Species
COD	Chemical Oxygen Demand
dB(A)	Decibel
EA	Environmental Assessment
EHS	Environmental Health Safety
EIA	Environmental Impact Assessment
EPD	Environmental Protection Department
PEPA	Pakistan Environmental Protection Act
EPA	Environmental Protection Agency
ESIA	Environmental and Social Impact Assessment
ESA	Environmental and Social Assessment
ESMP	Environmental/Social Management Plan
EMP	Environmental Management Plan
GIS	Geographical Information System
GOP	Government of Pakistan
GPS	Global Positioning System
HSE	Health Safety & Environment
HWMS	Hazardous Waste Management System
IEE	Initial Environmental Examination
IAIA	International Association for Impact Assessment
IWM	Industrial Waste Management
IUCN	International Union for Conservation of Nature
KM	Kilometers
LGO	Local Government Ordinance
MEAS	Multilateral Environmental Agreements
MSDS	Material Safety Data Sheets
NEQS	National Environmental Quality Standards
PPE	Personal Protective Equipment

PEQS	Punjab Environmental Quality Standards
NEAP	National Environmental Assessment Plan
Q&EHS	Quality, Environment, Health & Safety
O & M	Operation and Maintenance
PKR	Pak Rupees
PPM	Parts Per Millions
PEPC	Pakistan Environmental Protection Council/Punjab
QA/QC	Quality Assurance/Quality Control
RAP	Resettlement Action Plan
SWM	Solid Waste Management
TDS	Total Dissolved Solids
UNFCCC	United Nation Framework Convention on Climate Change
UNCC	United Nation Convention to Combat Desertification
UNEP	United Nations Environmental Programs
GOP	Government of Pakistan
WHO	World Health Organization
R&R	Rehabilitation and Resettlement
WWTP	Wastewater Treatment Plant

LIST OF PEOPLE CONSULTED WITH WRITTEN FEEDBACK

Sr.#	Name	Concerns
1.	Kamran Ali Khan	<p>During the survey in the study area following concerns of the local community were noted:</p> <ul style="list-style-type: none"> • Air pollution should be controlled effectively such as emissions generated from power generating activities. • Locals should be preferred for the job opportunities. • Wastewater should be treated prior to final disposal in nearby drain. • Solid waste should be managed effectively by adopting the standard practices of the area. • An effective EMMP should be designed and enforced with true spirit. • Health of the workers should be ensured. • Planation should be carried out at extensive scale. • Noisy activities should be confined. • Skilled and non-skilled persons both should get job.
2.	Muhammad Waqas	
3.	Qaiser Farooq	
4.	Ghulam Mujtaba	
5.	Mehboob Alam Shahid	
6.	Muhammad Latif	
7.	Mazhar Hussain	
8.	Shahbaz Khan	
9.	Waseem Ahmed	
10.	Rab Nawaz	
11.	ALLAH Yar	
12.	Ahmed Saeed	
13.	Muhammad Jabbar	
14.	Muhammad Ramzan	
15.	Ali Khan	

SOURCE OF DATA

- Punjab Environmental Protection (Amendment) Act 2012 (PEPA)
- Guidelines for the preparation and review of Environmental Reports, October 1997
- Review of IEE/ EIA Regulation, 2022
- World Weather Online.com
- https://en.wikipedia.org/wiki/Soap_mill
- <https://pcrwr.gov.pk/wp-content/uploads/2023/02/National-Water-Conservation-Strategy-for-Pakistan-2023-27.pdf>
- Water and Sanitation Agency (WASA), Lahore.
- RED Data Book of IUCN
- <https://en.wikipedia.org/wiki/Multan>

TERMS OF REFERENCES

Terms of References (TOR) for the Environmental Impact Assessment (EIA) process are designed to ensure compliance with the regulatory framework and facilitate a thorough review of the project's environmental implications. These terms are outlined as follows:

1. Review Fee Payment:

As stipulated in Regulation 7 of the Review of IEE and EIA Regulations, 2022, the proponent is required to submit a nonrefundable review fee to the Environmental Protection Agency (EPA) at the time of submitting the IEE/EIA report. The specific amount of this fee is determined by the rates specified in Schedule III of the regulations.

2. Submission of Required Documents:

The proponent must provide all necessary documents and details essential for the completion of the EIA/IEE report. This includes, but is not limited to, technical studies, environmental impact analyses, mitigation strategies, and any other information pertinent to assessing the project's environmental footprint.

3. Financial Responsibility for Fines and Penalties:

The proponent shall bear full responsibility for any fines or penalties levied by the EPA Punjab or the Environment Tribunal. This includes violations of environmental standards, non-compliance with regulatory requirements, or any other infractions identified during the review or implementation phases of the project.

4. Accuracy and Validity of Information:

The proponent is responsible for ensuring the correctness and validity of all information and documents provided to the consultant for onward submission to EPA Punjab. The consultant facilitating the EIA process will not bear any responsibility for inaccuracies or omissions in the information supplied by the proponent. It is imperative that the proponent conducts thorough due diligence to guarantee that all submitted materials accurately

reflect the project's potential environmental impacts and proposed mitigation measures.

These Terms of References are critical to ensuring that the EIA process is conducted in a transparent, accurate, and regulatory-compliant manner. Adherence to these terms will facilitate a comprehensive environmental review of the project, enabling informed decision-making by the EPA Punjab and contributing to the sustainable development and environmental stewardship goals of the region.

In M/s Khan Soap Mill

Proponent

Mr. Aamir Javed

For Center for Business Solution Consultants.