Table of Contents

LIST OF TABLES

LIST OF FIGURES

LIST OF ANNEXURES

EXECUTIVE SUMMARY

Title and Location of Project

This Environmental Impact Assessment (EIA) has been prepared for construction of Medical Devices (Arsoplast, Arsotulle Dressing & Care Gauze Dressing) Manufacturing Unit by M/s Arsons Pharmaceutical Industries (Pvt.) Limited. Said Project is to be located at Hadbast Mouza Bahngoor, Tehsil Pattoki, District Kasur.

Arsons Pharmaceuticals is a high-quality pharmaceuticals and surgical products manufacturing industry of Pakistan. It is comprised of medical and surgical sections. Products of Arsons Pharmaceuticals are:

Medical Section

Surgical Section

Name of Proponent

Mr. Muhammad Shahid Mukhtar s/o Mukhtar Ahmad is the proponent of proposed project.

Name of Organization Preparing the Report

In order to comply with the regulatory requirement of environmental laws of Punjab, M/s **EHS Services** has been entrusted for the assignment of conducting Environmental Assessment of Medical Devices (Arsoplast, Arsotulle Dressing & Care Gauze Dressing) Manufacturing Unit.

Policy, Legal and Administrative Framework

This study has been accomplished in line with the provisions – guidelines and directives of Punjab Environmental Protection Agency. Punjab Environment Protection Act 1997 (amended 2012) being as principal legislation of environmental protection in Punjab Province envisages protection, improvement, conservation and rehabilitation with the help of legal action against polluters and green awakening of communities. The Act is applicable to a broad range of issues and extends to socioeconomic aspects, land acquisition, air, water, soil, marine and noise pollution, as well as the handling of hazardous waste. The discharge or emission of any effluent, waste, air pollutant or noise in an amount, concentration or level in excess of the Punjab Environmental Quality Standards (PEQSs) specified by the Punjab Environment Protection Agency (PEPA) are prohibited under the Act.

As per Review of Initial Environmental Examination (IEE) and Environmental Impact Assessment (EIA) Regulations, 2022 the Said Medicines Manufacturing Unit falls under B(2) Category of projects "**Manufacturing and processing**" mentioned in Schedule II requiring EIA. For this instance,

Environmental Impact Assessment of the Project has been conducted in accordance with the Punjab Environmental Protection (Amendment) Act, 2012 and EIA/EIA Regulations 2022.

Brief Outline of Project

Said project is proposed for bandages cutting and packaging. Total project area is 80000.00 SFT. Total cost of project is approximately PKR 70 million. Salient features of project are given below:

SALIENT FEATURES OF PROJECT

Proponent Name:	Mr. Muhammad Shahid Mukhtar s/o Mukhtar Ahmad
Project Title:	Medical Devices (Arsoplast, Arsotulle Dressing & Care Gauze Dressing) Manufacturing Unit by M/s Arsons Pharmaceutical Industries (Pvt.) Limited
Project Location:	Hadbast Mouza Bahngoor, Tehsil Pattoki, District Kasur. **31.263034, 74.000254**
Consultant Name:	EHS Services Pvt. Ltd.
Cost of Project:	Approx. 70 millions
Area of plot:	80000.00 SFT
Source of Power:	WAPDA and generator of 50kva
Wastewater:	Wastewater will be disposed off in Main Drain after proper treatment through effluent treatment plant
Solid Waste:	Rejected material will be delivered back to supplier. Domestic waste will be handed as per area practices

Major Impacts and Recommended Mitigation Measures

In order to identify all the activities associated with the project during construction and operation phase with potential to cause adverse environmental impacts and harm a thorough review has been conducted. Project will not have any significant adverse impacts on the nearby community and on environment. Overall the project will have positive impacts on the local population and country as a whole.

Summary of Environmental Impacts during Construction Phase

Potential Impact	Criteria for determining Significance	Key Mitigation Measures

Dust Emissions—**Particulate matter emitteddur ing construction activities and gaseous emissions from site generators and transportation vehicles can result in deterioration of ambient air quality in the vicinity of the project site, and be a nuisance to the surrounding workers.**	PEQS for Ambient Air	✓ Sprinkling of water on dusty tracts and surfaces is recommended; ✓ Use of wind shield around stockpiles ✓ Vehicle speed restrictions should be applied in the project area; ✓ Raw materials will be transported in covered trucks; ✓ Ensuring that no stockpile is within 250m of the community.
Construction Noise- **Disturbance to surrounding communities due to operation of construction machinery at the project site.**	PEQS for Noise	Activities generating high levels of noise should be minimized at the project site. If the noise level will exceed the permissible limits with reference to national and OSHA standards, following recommendations are suggested to take action against the high noise levels: ✓ Proper tuning of construction machinery and vehicles is recommended. ✓ Ear muffs and ear plugs are recommended in case of high noise levels.
Solid waste Management— **Improper waste management may generate health and aesthetic issues**	Generation of excessive waste; Recyclable waste and reusable waste	✓ Proper solid waste management plan should be devised and implemented; Constructional waste should be utilized for road filling and maintenance. ✓ Domestic waste should be disposed of properly, handed over to contractors, placed in bins.
Vegetation Loss/ Soil erosion— **Loss of vegetation as a result of land clearance for the**	Unnecessary or excessive removal of trees	✓ Proposed project is to be done on a levelled area so no tree removal is envisaged.

construction **Purposes**	and shrubs	
Soil Contamination—**Oil and chemical spills can contaminate the soil**	Presence of visible amount of hydrocarbon in soil	✓ The proponent should ensure to control the dangers of oil spills during construction phase by regular monitoring. ✓ Machinery and vehicles should not be repair or refuel at site.
Socioeconomic Issues Workers Safety— **Safety hazards associated with the construction activity, particularly with the increase in traffic at the project site.**	No specific guidelines exist. A significant impact will be interpreted if there are complaints from the community or the occurrence of any injury or loss	✓ Provision of spill prevention and control kits; ✓ Use of impermeable surfaces in storage areas;

Summary of Environmental Impacts during Operation Phase

Potential Impact	Criteria for determining Significance	Key Mitigation Measures
Discharge of wastewater- **The discharge of untreated wastewater can be a negative impact.**	PEQs for effluents	✓ A water management strategy will be developed to ensure minimal water use ✓ Follow good housekeeping practices ✓ Municipal wastewater will be discharged in existing sewerage system after treatment in septic tank
Solid waste management- **Improper solid waste management may cause health problems and aesthetic issues**		✓ Separate waste bins will be placed for different type of wastes - plastic, paper, and metal etc. ✓ Domestic waste will be disposed as per area practices

Health & Safety Issues- **different operational activities at the project site may cause health and safety issues for workers if precautionary measures will not be adopted.**	OSHA Standards	✓ Proper training of workers and staff should be conducted to avoid the accidents. ✓ Use of PPEs should be implemented at workplace. ✓ First aid measures/medical facility should be provided at the project site. ✓ Safe drinking water must be provided to workers. ✓ Safety signs & boards should be placed ✓ Fire extinguishers, fire hydrants and fire alarms should be provided at convenient locations within the facility. These should be regularly inspected and maintained by a reputable fire security company. ✓ Fire drills should be conducted at least biannually to ensure that workers are conversant with the action to take in the event of fire or explosions.

ENVIRONMENTAL MANAGEMENT PLAN & PROPOSED MONITORING:

For effective implementation and management of mitigation measures, an Environmental Management Plan has been prepared. The EMP provides a delivery mechanism to address potential impacts of project activities, to enhance project benefits and to introduce standards of good practice in all project activities. The EMP has been prepared with the objective of:

- Defining legislative requirements, guidelines and best practices that apply to the project;
- Defining mitigation/ monitoring plan required for avoiding or minimizing potential impacts assessed by the EIA;
- Defining roles and responsibilities of the project proponent and the contractor;
- Defining requirements for environmental monitoring and reporting;
- Defining the mechanism with which training will be provided to the project personnel.
- Environmental sensitivities and impacts, as well as the associated mitigation plan have been addressed in the EMP.

An Environmental Management Plan (EMP) has been prepared and provided in report, providing:

- A systematic approach to ensure that mitigation strategies prepared in this EIA are implemented during project activities.
- An appropriate monitoring plan is devised to ensuring strict adherence to the environmental mitigation and control measures.
- A training program is devised to providing awareness training on all potential environmental issues of the project to all personnel at site.
- A waste management plan, identifying the most suitable waste disposal and pollution control options throughout the project lifecycle.

Proposed Environmental Monitoring

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

- ***Ambient Air*** Monitoring for ambient air should be conducted on biannual basis during constructional phase of the project and report should be submitted to EPA Punjab.
- ***Noise*** Regular monitoring for noise level should be maintained periodically during construction and operation phases of the project and report should be submitted to EPA Punjab.
- ***Water quality*** Monitoring of water quality should be conducted on annual basis during construction and operation phases of the project and report should be submitted to EPA Punjab.

CONCLUSION

The Environmental Impact Assessment contains description of the project, description of the environmental baselines, potential environmental impacts and suggested mitigation measures. It is concluded in this study that all potential environmental concerns associated with the project have been adequately addressed, and no further study is required in this context. This report further draws the conclusion that the impacts identified are easily manageable and reversible, no long-term impact is expect and no deterioration or consequential depletion of local natural resources is expected. It is accordingly recommended that Environmental Approval for the project should be issued by the Punjab Environmental Protection Agency, subject to payment of the requisite scrutiny fee by the proponents of the project.

1 INTRODUCTION

This chapter includes the data relevant to the undertaking of the Environmental Impact Assessment (EIA) and details of the project title, project proponent, Consultants, the rationale of the project and the approach taken to the EIA study.

1.1 Project Background & Overview

1.2 GENERAL

The pharmaceutical industry in any country is considered as the mainstay of public health. Looking at the global scenario, the importance given by developing nations to the pharmaceutical sector can be clearly identified by including healthcare and pharmaceutical industry in their health and welfare strategy. The global pharmaceutical market is valued at no less than US$440 billion, with annual growth of 6%.

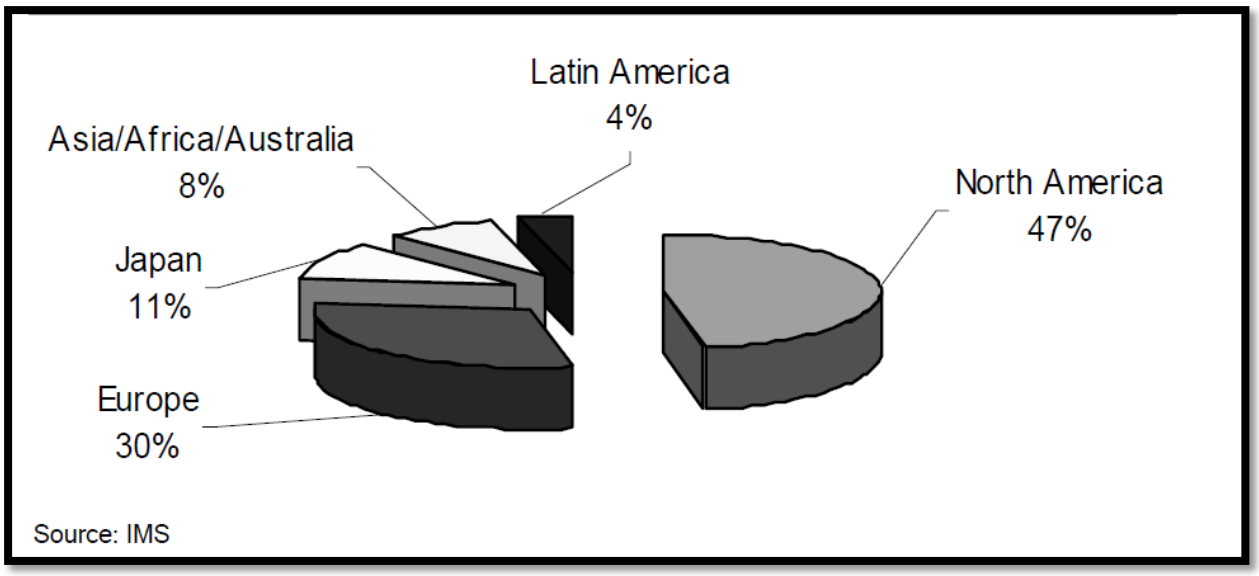


Figure 1-1: Global Sale-Pharmaceuticals (%)

The pharmaceutical industry is considered the backbone of public health services in Pakistan. This is strategically important both for the well being of the population in general and for the provision of good yet affordable healthcare in particular. The low cost of production and the huge potential of this sector has attracted major multinationals to establish their operations and production facilities in Pakistan.

Pakistan's Pharmaceutical industry started out slowly but gradually became an integral contributor to the developing economy of Pakistan. At the time of formation, there were only 10 members of Pakistan Pharmaceutical Manufacturers Association (PPMA), as of 2015 there were around 235 companies holding membership. Pharmaceutical industry is one of the most organized industries in Pakistan, employing a large number of professionals in all areas of operations. Pakistan meets 80%

of its domestic demand of medicines from local production and 20% through imports. The market for pharmaceuticals in Pakistan has been expanding at a rate of around 10 to 15% since last few years.

Pakistan is also exporting its surplus drugs to a large number of countries particularly to the Asian and African regions with an expanding trade in the newly emerged Central Asian States. Presently, the pharmaceutical industry in Pakistan is producing all the major pharmaceutical dosage forms. Similarly, there are some special products e.g. immunologicals, anti-cancer drugs, certain anti-diabetics, antidotes and products manufactured from biotechnology, which are still being imported, in the finished form. These specific areas provide excellent opportunities for investment. Only few bulk pharmaceutical raw materials are being manufactured locally and most of the pharmaceutical raw materials are being imported in large quantities from different countries of the world. This sector also gives challenge to explore and avail the opportunities.

Pakistan's Pharmaceutical market is very significant in the World market as it is the 10th largest in Asia Pacific and the 4th fastest growing market (2008/09) after China, India & Vietnam. The total worth of Pakistan's Pharmaceutical industry is measured at Rs. 191 Billion (USD 1.8 Billion) in September 2015 most of which is down to private sector investment. The private sector contributes to an overwhelming 82.5% of the total health expenditure. Figure below provided insight of growth trend for both MNC's and National pharmaceutical companies.

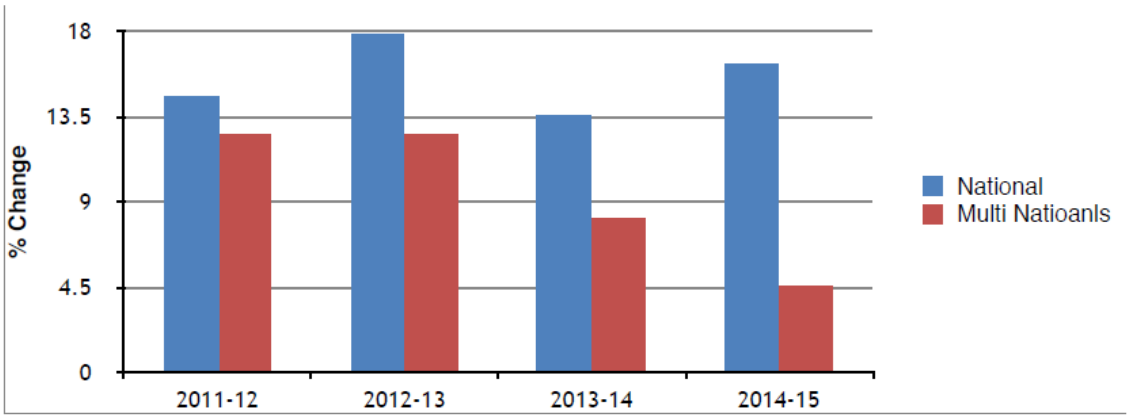


Figure 1-2: Growth trend of National and Multinational Pharmaceutical Companies

Some key statistics of Pakistan Pharmaceutical Market are as follows:

Table 1-1: Statistics of Pakistan Pharmaceutical Market

Enterprises / Companies active in the field	600
Number of Employees	Over 100,000
R&D Expenditure	1% of profit (by each company) goes to R&D Fund of the Ministry of Health

Registered Drugs	47000
Registered Molecules	1100
Controlled Price Drugs	Almost All
Estimated Size of the Pharmaceutical Market	2.6 Billion US $ (IMS Q4, 2015)
Total Registered Pharmaceutical in Pakistan	Approx. 660
Multinational Pharmaceutical Company	18
National Pharmaceutical Company	641
Projected Growth of Market in 2016	13.06%

The pharmaceutical industry in Pakistan comprises of over 400 Medical Devices (Arsoplast, Arsotulle Dressing & Care Gauze Dressing) Manufacturing Units including around 30 operated by multinationals present in Pakistan. Province wise break up of Medical Devices (Arsoplast, Arsotulle Dressing & Care Gauze Dressing) Manufacturing Units in Pakistan is given below:

Table 1-2: Province wise breakup of Medical Devices (Arsoplast, Arsotulle Dressing & Care Gauze Dressing) Manufacturing Units in Pakistan

Province	National	Multinational	Total
Punjab	205	4	209
Sindh	92	23	115
KPK	50	0	50
Balochistan	7	2	9
AJK	3	0	3
Total	356	30	386

The key to the success of Pakistani pharmaceutical companies is based on a simple formula, i.e. the production of high quality products at current Good Manufacturing Practices (cGMP)- compliant facilities and offering them at the most economical rates. Nearly all of Pakistan's leading pharmaceutical companies has maintained high standards to ensure compliance of all operations of production and quality control under the cGMP guidelines. As a result, they are now successfully exporting their products to various international territories

A Bandage is a piece of material used to support a medical device such as a Dressing or Splint, or on its own to provide support to or to restrict the movement of a part of the body. When used along with a dressing, the dressing is applied directly on the wound and a bandage is used to hold the dressing in place. There are two categories of dressings: Adhesive dressing and Gauze dressing. An Adhesive

dressing is a piece of medical plaster that is used in case of injuries that do not require a full-fledged dressing. They are meant for small injuries or wounds. The Gauge dressing are thick cotton pads that are used to cover large wounds. They are held in place by wrapping with a gauze strip (bandage) or a tape. There are three main categories of "Bandages" that are Roller bandage, Tubular bandage, and Triangular bandage. They are all used in different ways for one common intention and that is to either cover wounds or to apply pressure in controlling bleeding and support the strain or the sprain. Roller bandage are long strips of bandages that can further be subdivided into two types: An Elastic roller bandage that is applied to support a strain or a sprain and is wrapped around the joint or limbs many times. It should be applied firmly. Cotton or Linen roller bandages are used to cover gauze dressings. These bandage can come in any number of widths and lengths and can be used for almost any bandage application, including holding a dressing in place.

For any project to be initiated in Punjab, it is mandatory to accord Environmental Approval from EPA Punjab under Section-12 of the Punjab Environmental Protection (Amendment) Act, 2012 by filing an IEE or EIA before EPA Punjab, as may be defined in Review of IEE/EIA Regulations, 2022 or recommended by EPA Punjab. For this purpose, the proponent has decided to engage environmental consultants, **M/S EHS Services** to conduct Environmental Assessment for the execution of project. The purpose of this study is to identify the environmental baseline i.e. physical, biological and socio-economic/cultural conditions and assess all possible impacts arising during the construction and operation phase of the project and to find out appropriate measures for their mitigation, to either eliminate those impacts or to bring them to acceptable level and formulation of Environmental Management Plan (EMP) for implementation of the project in environment friendly manner. This report is prepared by critically examining of the environmental factors which might be affected due to construction and operation of the project. The purpose of this report is to analyze impacts of the project. This EIA provides the basis for a determination of the degree of the environmental impacts of the project. The report provides relevant information, as required under the officially approved format, to help the decision makers i.e. EIA Punjab before issuing for the Environmental Approval.

1.3 Identification of the Project and Proponent

1.3.1 Nature of Project

The Environmental Impact Assessment (EIA) report covers the project for Establishment of Medical Devices (Arsoplast, Arsotulle Dressing & Care Gauze Dressing) Manufacturing Unit. The salient features of this project have been described in Chapter 3, and briefly in Executive Summary of EIA.

1.3.2 Area/Size of project

Said unit has total plot area of 80,000 SFT. Area distribution is given below:

Table 1-3: Area Distribution

Total area of plot	80000.00 SFT

Total Covered area	44969.00 SFT
Open area	42155.00 SFT

1.3.3 Location of the Project

Said Project is to be located at Hadbast Mouza Bahngoor, Tehsil Pattoki, District Kasur. Coordinates of project site are 31.263034, 74.000254.

Figure 1-3: Location Map

1.3.4 Proponent

Details of proponent are given in following table:

Proponent Details	
Proponent Name	Muhammad Shahid Mukhtar S/O Mukhtar Ahmad
Address	House No.#42, Indus Block, Green Forts 2 Farm Housing Scheme, Lahore

1.3.5 Details of Consultants

For the preparation of the EIA Report of the said project, the proponent has hired the services of the environmental consultants; **M/S EHS Services.** Team comprising of environmental engineers, chemical engineers, environmental experts and environmentalists has worked on this report. EHS Services is one of the pioneers Environmental Consultancy Companies in Pakistan with an unrivalled reputation for providing expert, tailored services and solutions. EHS Services provides the environmental services, litigation and consultancy to clients both industry and government.

EHS Services is providing quality services in various environmental sectors i.e.

- Environmental Assessment Reports i.e. IEE/EIA
- Environment Management Plans (EMP)
- Designing of Emission Control Equipment
- Waste Water Treatment Plant (WWTP) Designing
- WWTP Construction Supervision, Commissioning and Operations
- Establishing Bottled Water Plant based on RO or UF
- Lab testing (Drinking Water & Waste Water Analysis , Soil Analysis, Sludge Testing, Petroleum/ Lube Oil Testing, Fertilizer Analysis, Pesticides in Water, Soil, Fertilizer, Coal, Coke Analysis)
- Monitoring and inspection
- Environmental modeling

Consultant Details	
Consultant	EHS Services Pvt. Ltd.
Address	House No.#12, Street No.#06, V-Lane Cavalry Ground Extension, Lahore Cantt
Focal Person	

Name	Engr. Muhammad Asif
Contact No.	0304-4404111, 0345-3122696

Based on the requirements of the study, consultant formed a team of experts comprising a team leader (Environmental Specialist) with professional support from the Environmental Engineer, Environmental Scientists and chemical engineers. The professional staff was involved in analyzing the data, impact assessment and mitigation measures and report compilation. The following table lists the names of experts involved in the making of EIA report:

Table 1-4: List of Experts

Sr. #	Name	Qualification	Role
Engineers			
i.	Engr. M. Asif	M.Sc. Chemical Engineering	Monitoring and Testing
ii.	Engr. Muzna Manzoor	M.Sc. Environmental Engineering	Designing and report review
iii.	Engr. Fahad Nazir	M.Sc. Chemical Engineering	Socioeconomic Survey
iv.	Engr. Rida Azhar	B.Sc. Environmental Engineering	Report preparation
v.	Mahtab Alam	M.Sc. Chemical Engineering	Collection of baseline data
vi.	Saad Khattak	B.Sc. Chemical Engineering	Site survey and analysis of impacts on surroundings

1.4 Purpose of EIA Report

The development of any Project leads to positive and adverse changes in environmental and change in social settings of the Project Area. The intensity and level of change, however, depends upon the nature of the Project and the baseline environmental conditions of the area. The commencement of said project will cause minor to moderate adverse environmental and social impacts on the surrounding area. Thus, an environmental and social study is mandatory to establish the baseline conditions, evaluate the possible adverse impacts if any, and devise the mitigation measures.

Section 12 of Pakistan Environmental Protection Act, 1997 (PEPA, 1997) states "No proponent of a project shall commence construction or operation unless he has filed with the Provincial Agency an Environmental Impact Assessment (EIA) and, where the project is likely to cause an adverse environmental effect, an Environmental Impact Assessment (EIA), and has obtained approval from

the Provincial Agency in respect thereof." Later on, Punjab Environmental Protection Agency (Review of IEE and EIA) Regulations, 2000 provided the guidelines for categorizing the Projects.

1.5 Objectives of EIA

The main objectives of this EIA study are:

- To determine and document the state of the environment of the project area to establish a baseline in order to assess the suitability of the Said Project in that area.
- To identify pre-construction, construction and operation activities and to assess their impacts on environment.
- Provide assistance to the proponent for planning, designing and implementing the project in a way that would strengthen environment, improve ecological resilience, eliminate or minimize the negative impact on the biophysical and socio-economic environment and maximizing the benefits to all parties in cost effective manner.
- To present Mitigation and Monitoring Plan to smoothly implement the suggested mitigation measures and supervise their efficiency and effectiveness.
- To provide opportunity to the public for understanding the project and its impacts on the community and their environment in the context of sustainable development.
- Prepare an EIA Report for submittal to the Environmental Protection Agency, Punjab for according Environmental Approval.

1.6 Structure of Report

This EIA reviews information on existing environmental attributes of the Study Area. Geological, hydrological and ecological features, air quality, noise, water quality, soils, social and economic aspects and cultural resources are included. The report predicts the probable impacts on the environment due to the said project. This EIA also proposes various environmental management measures. Details of all background environmental quality, environmental impact/pollutant generating activities, pollution sources, predicted environmental quality and related aspects have been provided in this report. The structure of the assessment report will be as follow;

- Description of the Project
- Description of Environmental and Social Conditions
- Assessment of Environmental Impacts and Mitigation Measures
- Mitigation Measures for Identified Impacts
- Public Consultation

- Environmental Management and Monitoring Plan (EMMP)
- Recommendations and Conclusions

2 SCREENING & SCOPING

SCREENING

According to the Section 12 of Punjab Environmental Protection Act, 1997 (amended 2012) which states;

"No proponent of a project shall commence construction or operation unless he has filed with the Government Agency designated by Federal Environmental Protection Agency or Provincial Environmental Protection Agencies, as the case may be or where the project is likely to cause an adverse environmental effect an Environmental Impact Assessment (EIA) and has obtained from the Government Agency approval in respect thereof."

As per Review of Initial Environmental Examination (IEE) and Environmental Impact Assessment (EIA) Regulations, 2000 the Said Medicines Manufacturing Unit falls under B(2) Category of projects "**Manufacturing and processing**" mentioned in Schedule II requiring EIA. For this instance, Environmental Impact Assessment of the Project has been conducted in accordance with the Punjab Environmental Protection (Amendment) Act, 2012 and EIA/EIA Regulations 2022.

Scoping

Temporal and Spatial Boundaries:

Temporal Boundaries:

Construction period of said project is approx. 2 years. Operation Lifespan will be more than 25 years.

Spatial Boundaries:

Said project will have positive and negative impacts at local and national level. The establishment of the said project will contribute to enhancing Pakistan's domestic productivity, and help diversify Pakistan's economy. It will create potential of improvement for social and cultural values of local people's exchange of values and standards through positive social interactions. Positive changes in lifestyles will occur due to availability of income when the natives take up Company jobs.

Important issues and concerns raised during consultation

- Environmental enhancement measures such as; Tree plantation, monitoring and safety should be ensured
- HSE plan should be enforced strictly
- Preventive measures should be adopted to avoid any unfortunate incident
- Tree plantation must be ensured
- Local employment should be ensured
- Proponent shall work for betterment of community
- All emissions and effluents shall be managed properly to avoid public nuisance.

Significant Impacts identified in scoping:

Construction Phase	Operation Phase
Dust emissions	Particulate emissions
Wastewater	Degradation of surface water quality due to process water and sewage direct disposal
Impacts of accidental spillages	Work injury/hazards/incidents/accidents

Safety	Disturbance of communities due to noise
Solid waste management	Solid waste management

ALTERNATIVES

Site Alternatives

Said project is the Establishment of M/S ARSONS PHARMACEUTICAL PVT. LTD. Selected site is surrounded by other industries and no other alternative site is considered for Said Project. The site is well located in regard to the following:

- Within vicinity of existing unit
- Plot near other industries
- Easy road access to the market
- No settlements in close vicinity
- No watercourse within a safe distance
- No ecologically sensitive or declared protected area within safe radius of the selected site

In view of these facts, it can be concluded that the Selected Site is best suited for the project, and will not pose any adverse impact or threat on any component of the environment.
Distance of selected site from different receptors is as follows:

Receptors	Name	Distances
Residence	Nauthe Jagir	1.2km
Educational institute	Hashir School	1.53km
Hospital	Hospital UCH Lahore	8.40km
Industry	Pak Poly Industries Pvt	0.95km
Road	Multan Road	1.94km

Considering the facts that said site is at a safe distance from sensitive receptors. The said site has advantage of not only to be environment friendly but also potentially sound to enhance sustainable development in the region. Therefore, given site is the most suitable for establishment of said project.

Process/Technology Alternative

Keeping in view all the environmental consideration the project site is located in an industrial area using the best suitable technology for air emission and for the treatment of wastewater. Best suited technology has been proposed for the said project including no air emission. Water mitigation techniques also considered at their best including Activated Sludge Process for wastewater treatment.

Environmental Alternative

The unit site is located in an area which is devoid of any biodiversity including forestry, wildlife, migratory birds, game reserves (flora and fauna), or protected species of fauna & flora; fishery or aquatic biology; watershed. There is no cultural or any other heritage in the project area. Summarily, there is no environmental sensitivity in the project area. These factors are also strongly supportive of the proposed project site.

Economic Alternative

Selected land is under ownership of proponent and no cost is required to purchase other land so it is viable and economic option for proponent to construct frozen fries unit. The cumulative effect of this types project would result in noticeable economic growth. The project will also make a positive consideration to the industrial growth.

3 DESCRIPTION OF THE PROJECT

3.1 General

This section covers the project comprehensively. It holds salient features; including location, project site layout, objectives, alternatives, cost and magnitude of operation and various phases.

3.2 Type and Category of Project

As per Review of Initial Environmental Examination (IEE) and Environmental Impact Assessment (EIA) Regulations, 2022 the Said Medicines Manufacturing Unit falls under B(2) Category of projects "**Manufacturing and processing**" mentioned in Schedule II requiring EIA. For this instance, Environmental Impact Assessment of the Project has been conducted in accordance with the Punjab Environmental Protection (Amendment) Act, 2012 and EIA/EIA Regulations 2022.

3.3 Objectives of the Project

Main objectives of said project are:

- Main objective of company is to Server Humanity by manufacturing high quality pharmaceuticals and surgical products that would enhance the health and well being of individuals.
- To improve main source of income and export revenues
- To contribute in economic development
- To facilitate in bridging the gap between producer and consumer
- Being a labor intensive sector, it will create new employment opportunities as a part of the project activities scope

3.4 Alternatives

The proposed project is surrounded by other industries; therefore no site alternatives were considered. There is no protected or environmentally sensitive area present in the vicinity. Moreover, the basic infrastructure facilities, i.e. metaled road network, proximity to electric transmission system, manpower, project economic viability with reference to specific site, land use policies, further expansion possibilities, and etc. are available on-site.

Reasons of Site Selection

The proponent has selected this site due to the following reasons:

- Presence of industries nearby
- Located on accessible road
- No ecologically sensitive or declared protected area within 10 km of the selected site

Areal distances of site from nearest receptors are as follows:

Receptors	Name	Distances

Residence	Nauthe Jagir	1.2km
Educational institute	Hashir School	1.53km
Hospital	Hospital UCH Lahore	8.40km
Industry	Pak Poly Industries Pvt	0.95km
Road	Multan Road	1.94km

Google Map showing areal distances of project site and receptors is provided in fig 3-1.

3.5 Location & Site Layout of Project

Said Project is to be located at Hadbast Mouza Bahngoor, Tehsil Pattoki, District Kasur. Coordinates of project site are 31.263034, 74.000254. Google Map of Project Site is given in Fig 3-2. Layout map of factory site is annexed (ANNEX 3).

Figure 3-1: Nearest Receptors

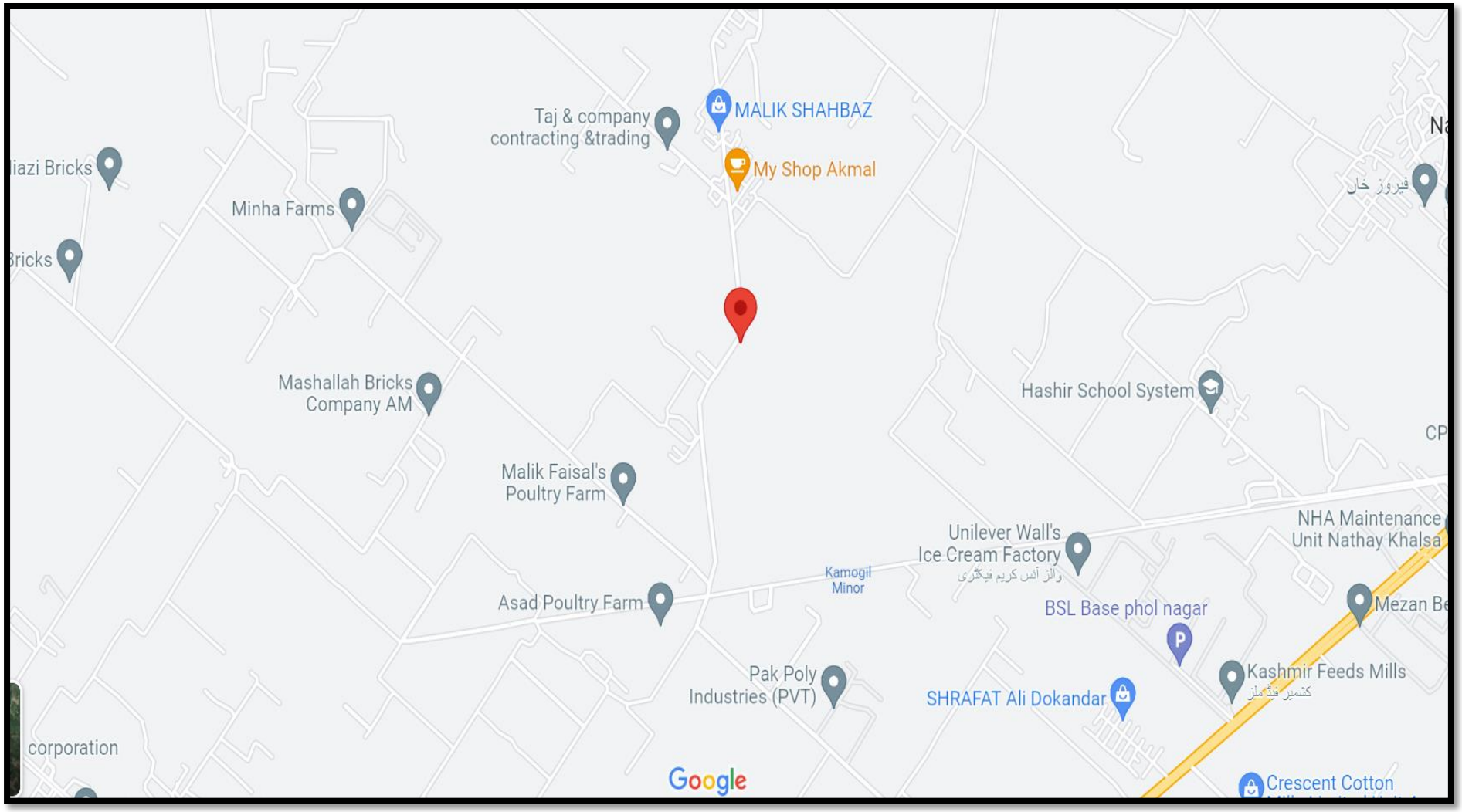


Figure 3-2: Google Map of Site

3.6 Road Access

Project site is accessible through Multan Road. Accessibility map of the project area is provided in fig 3-2

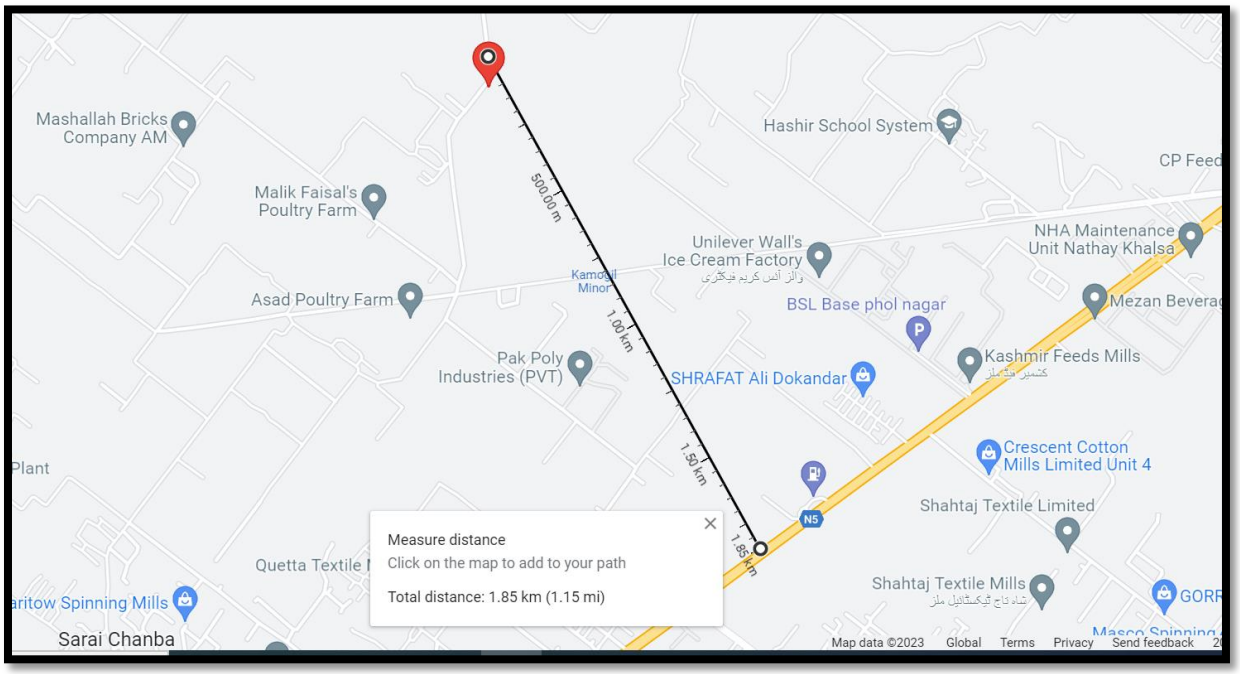


Figure 3-3: Road Access

3.7 Relocation and Rehabilitation Plan

The main areas to be considered for site restoration include the construction area, temporary tracks; land used for vehicle and material stores, material excavation pits etc. These areas should be restored to its original condition with the maximum possible effort. The restoration work comprises the removal of temporary construction works and removal of any fence installed, leveling of areas (wherever required), etc. The following procedures will be adopted for the restoration of the site:

- All temporary construction built for the site development will be removed.
- Any debris from construction activities should be removed properly from the site.
- All fencing and gates will be removed and pits will be backfilled.
- Whole of the site will be covered with the original soil to the original levels and grades and re-vegetation will be done, where required.

3.8 Vegetation Features of Site

The proposed extensions do not require any removal and replacement of the existing vegetation/plantation as project will be constructed at leveled area with almost no vegetation.

3.9 Land Use

Proposed project site is located in an area surrounded by open plots, industries, poultry farms and brick kilns

3.10 Description of the Project

Said project is construction of Medical Devices (Arsoplast, Arsotulle Dressing & Care Gauze Dressing) Manufacturing Unit by M/s Arsons Pharmaceutical Industries (Pvt.) Limited.

3.10.1 Raw materials:

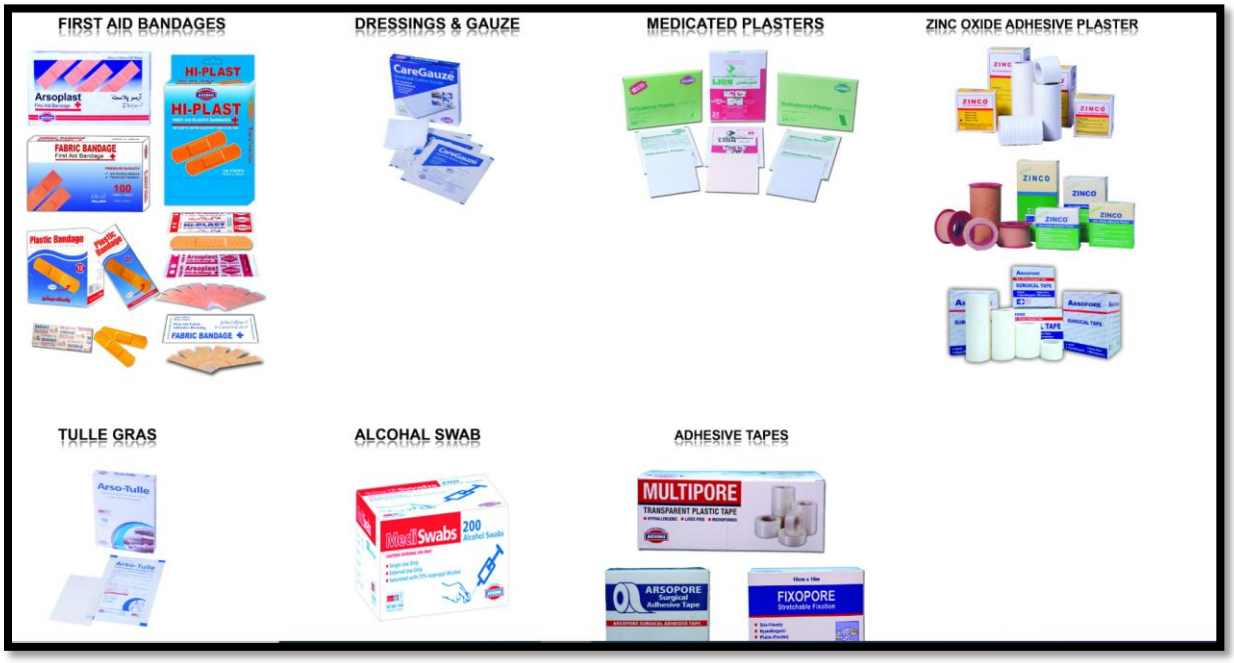
List is attached as annexure

3.10.2 Products:

Pharmaceuticals are:

Medical Section

Surgical Section



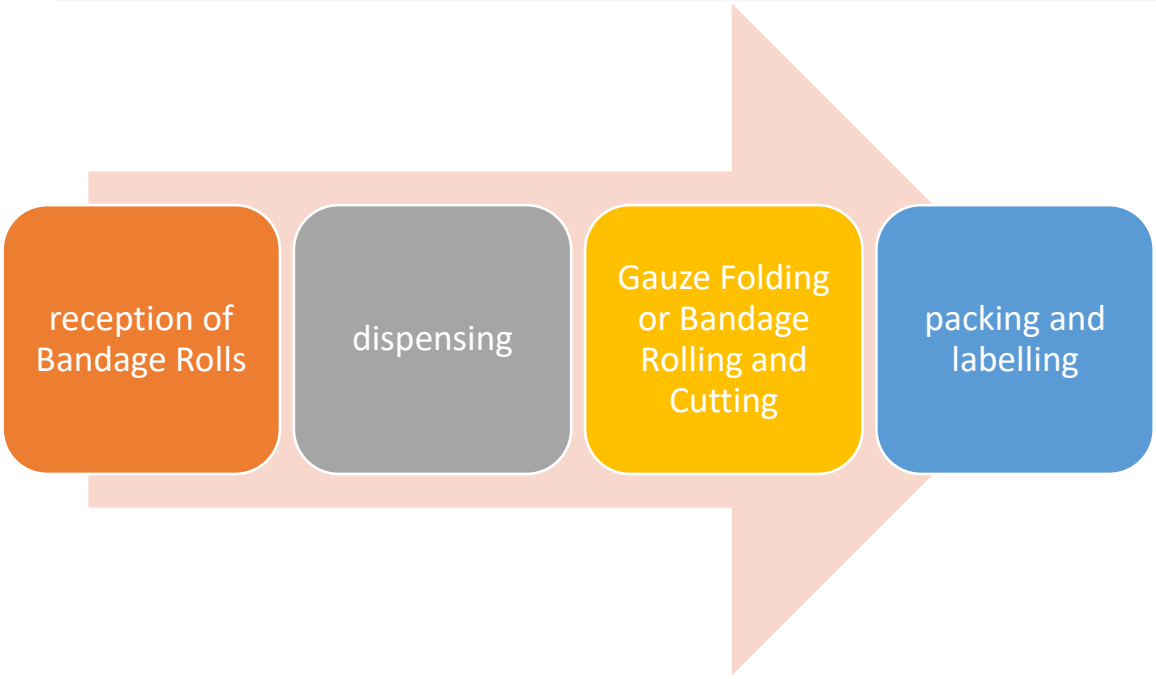
3.10.3 Machinery Required

Following is the list of required machinery along with capacities:

Equipment Name	Capacity
Bandages automatic wrapping machine	5-8 shippers/hr
Bandages automatic packing/cartooning machine	240 boxes/hr
Bandages cutting, sealing machine	180-200 boxes/hr
Gauze packing and sealing machine	180-200 boxes/hr

3.10.4 Process

Project only involves bandage rolls cutting and packing. The rolled fabric in the form of rolls of 18 – 20 m or as per requirement is received and then transferred to the cutting and folding section. The bandage rolls are then passed through the Calendering machine to give a proper rigid shape to the rolls. The bandage cloth is fed into a winding machine to make rolls from the cloth of the desired length. After a sufficient roll (200 – 300 m) has been wound on an aluminum pole of the machine, this large roll is then cut into smaller 3 – 5 m length rolls or whatever is the desired length while the width is maintained in between 1.5 – 3 cm or as desired. After the cutting process is completed, the rolls are charged in an autoclave for sterilization for about 5 – 10 minutes. Thereafter the rolls are collected and packed in dozens for marketing.



3.11 SUPPLIES & WASTES

3.11.1 Water Supply

During construction phase, approx. 2m3/d of water will be required. During operation phase, water will be required for domestic purpose. The groundwater will be utilized to fulfill the general requirement of water. The groundwater will be extracted from a depth of 200-250 ft. Domestic water requirement will be approx. $5m^3/d$.

3.11.2 Power Requirement

Source of power is WAPDA and generator .

3.11.3 Manpower

During construction phase, 8 to 10 workers are required. During the operation phase of the project, the total manpower requirement is estimated to be 15 people comprising administrative, technical, and non-technical persons. Recruited staff will be given appropriate training in order to educate them on the specific job tasks to be performed

3.11.4 Wastewater

Wastewater will be disposed off in main Drain after proper treatment through effluent treatment plant. Municipal wastewater coming from various municipal works, such as cleaning will be generated, which will be treated via a Septic Tank.

3.11.5 Solid Waste

The solid waste to be generated during construction phase consist of metal scrap from Fabrication Work and debris from construction activities. Debris can be re-used for refilling purposes whereas metal scarp is saleable item. During operation phase, packaging waste will be generated and it will be

recycled or reused as much possible. Domestic waste will be disposed off as per area practices.

3.12 COST AND MAGNITUDE OF THE PROJECT

The magnitude of operation includes:

- ✓ Detailed site survey, planning and demarcation of the various regions in the project area
- ✓ Process, electrical and civil designing
- ✓ Purchase and delivery of equipment
- ✓ Civil construction
- ✓ Mechanical and electrical erection
- ✓ Testing and commissioning
- ✓ Plantation of various ecologically important species on the designated green space.

Estimated Cost of the Project is Rs. 70 millions.

3.13 SCHEDULE OF IMPLEMENTATION

Construction period of aforesaid unit is approx. 5-6 months.

Sr. #	Activities	3 Months			3 Months		
		1M	1M	1M	1M	1M	1M
1	Detailed Designing						
2	Construction of Unit						
3	Obtaining required approvals						
4	Installation of machinery						
5	Commissioning of project						

4 ENVIRONMENTAL AND SOCIAL BASELINE

4.1 General

This section covenants with the prevailing environmental conditions of the project area. Information that has been collected from different sources, including public literature, reports of other studies conducted in this area, knowledge with concerned government departments and the first-hand surveys and field measurements has been presented in this section. This chapter encompasses all the important aspects of local environment; such as biological resources, socioeconomic development and quality of living values.

A Social survey in the Project Area was also carried out through consultation with the various communities. Local residents living in the Project Area were interviewed to obtain their feedback regarding Project and its impacts on their daily life/future in the short and long term.

4.2 Purpose of Baseline

For any development project, the prevailing environmental conditions need to be assessed prior to the stages of planning, designing and execution of the project. Identification of physical, ecological and social aspects of environment and collection of relevant data is essentially important for the evaluation of impacts as well as for the suggestion of adequate mitigation measures, which forms the basis for the implementation of the proposed project in terms of prevailing environmental and social conditions in the study area.

4.3 Study Area/ AOI

It is imperative to delineate the area where the potential significant impacts of the proposed Project are envisaged. The Study Area is the area within which the potentially significant adverse environmental and social impacts of the proposed intervention are envisaged. In the light of this, potential impacts on the existing environment have to be considered in a larger geographical area than the proposed "Project Area" depending upon the extent of direct/indirect impacts.

So the "Study Area" includes the Project Area, nearby land having settlements, agriculture fields, etc. The Study Area map is shown in Figure 3.1.

4.4 Physical Environment

This part examines the physical resources such as topography, soil, climate, surface and ground water resources and quality, ambient air quality and noise of the Project site to assess whether the project under assessment can or does have any impacts on any of these parameters. The description of physical environment of project site is presented in the following sub sections.

4.4.1 Topography

The district is bounded by the River Ravi in the northwest and River Sutlej in the southeast. The old course of River Beas bifurcates the district into two equal parts that are locally known as Hithar and Uttar or Mithan Majha and Khara Majha. The low lying or riverine area (Hithar area) is generally inundated during Monsoon season, and the upland area (Uttar area) is a flat plain sloping from northeast to southwest. Both areas have a height differential of approximately 5.5 m. The natural surface elevation of the district is 198 m above mean sea level. The east and west ends of the district comprise the flood plains of River Sutlej and Ravi, characterized by the breaching of looping river channels braided around the meander bars.

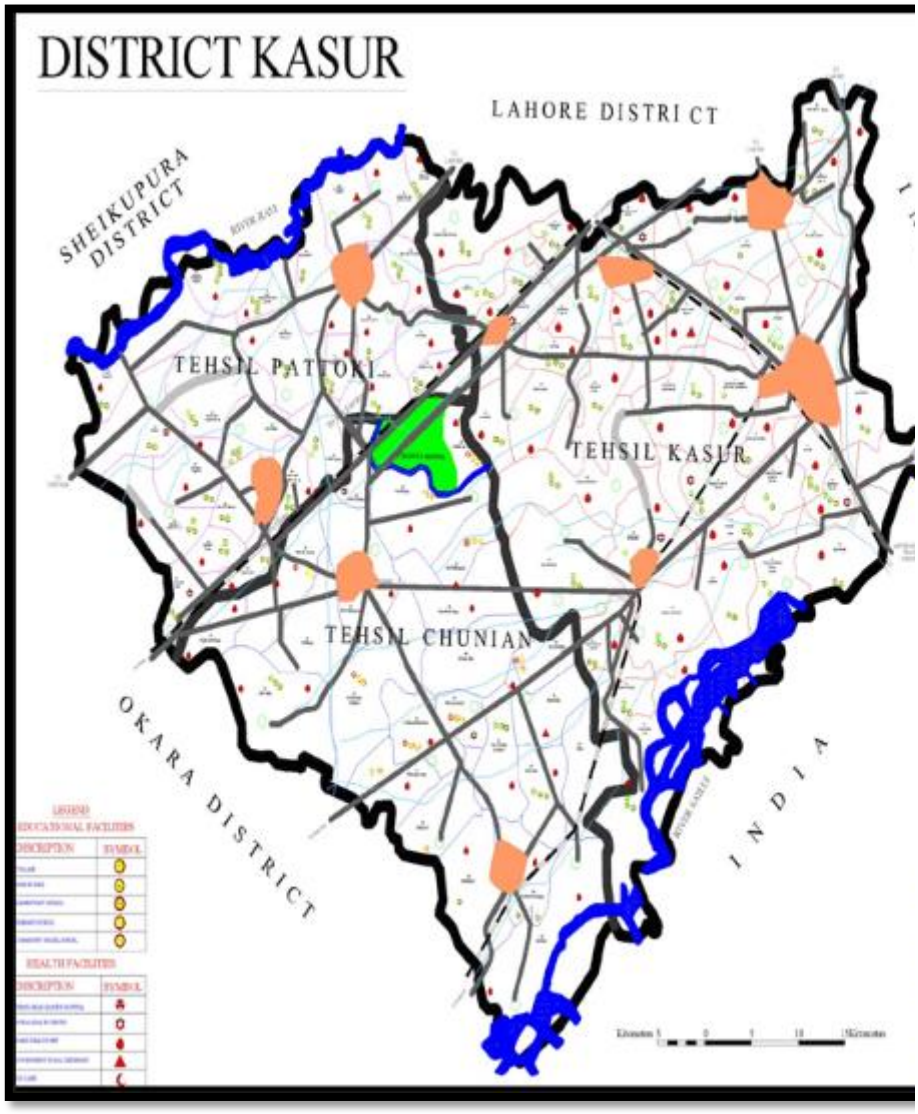


Figure 4-1: District Kasur Map

4.4.2 Geography

Kasur district is located between 30° 40′ to 31° 20′ north latitudes and 73° 38′ to 74° 41′ east longitudes. It is bounded on the north by Lahore district, on the east and southeast by India, on the southwest by Okara and on the northwest by Sheikhupura district. Kasur belongs to the Majha region of Punjab; historically, Majha was comprised of the older, settled, parts of the Bari Doab.[1] Major Pakistani towns in the Bari Doab region are Narowal, Lahore, Kasur, Sheikhupura, Nankana Sahib, Gujranwala, Sialkot, Wazirabad, Gujrat, and Tarn Taran Sahib. The people hailing from Majha are referred to as Majhis (or Majhhis).

4.4.3 Seismicity

The district belongs to Zone 2A of the Seismic Zone Map of Pakistan, which means there will be minor to no damage to property due to earthquakes.

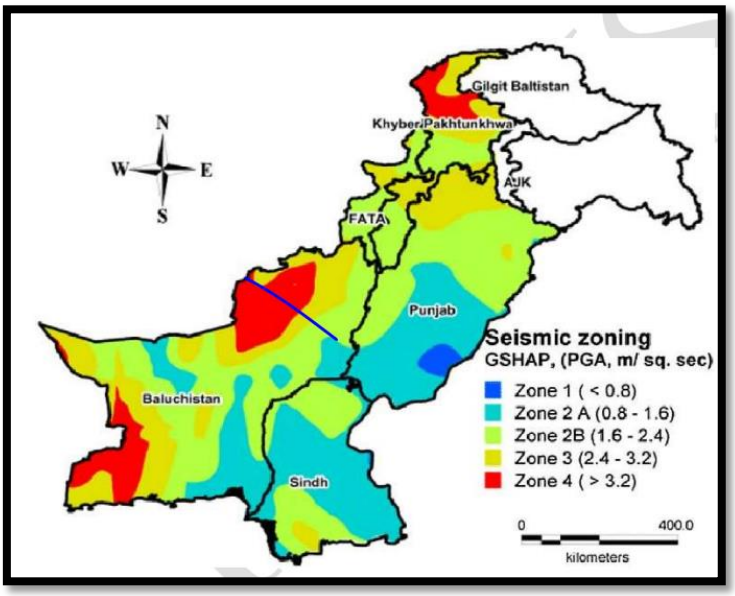


Figure 4-2: Seismic Zoning

4.4.4 Hydrology

The River Sutlej, off-taking from the mountains of Tibet in China, flows through the Indian State of Himachal Pardesh, as well as Haryana and others before entering Pakistan through Kasur district. It flows in the district up to the Sulemanki Headworks, and then flows along the Indo-Pakistan border, before joining the other tributaries of River Indus at Panjnad.

The River Ravi enters Lahore district, and after flowing for 55 km, leaves the district at the borders of Kasur district. These two rivers, thus, form the southeast and northwest borders of the district respectively.

Other smaller perennial rivers of the district include the Rohi Nullah, Katora Nala, Sem Nala, and Ghana Nala.

Ghamaghar Lake is an important brackish water lake in the district. This lake is on the Ramsar List of Wetlands of International Importance.

Reference: https://pakistanalmanac.com/punjab-Kasur

4.4.5 Soils

his soil of the riverine (hithar) area is generally sandy and rich in plant nutrients. The soils of the upland (uttar) area are sandy.

4.4.6 Climate

Kasur district is located in the Semi-Arid Subtropical Climate Zone, where intense summer heat and cold weather are experienced. The summer season starts in April and continues to September, with May-June being the hotter months and June being the hottest. The mean maximum and minimum temperatures for June in Kasur are 40 °C and 27 °C respectively, and the temperature may even go up to 45 °C. The winter season lasts from November to March with January being the coldest month. The mean maximum and minimum temperatures during this month are 20 °C and 6 °C respectively.

The Monsoon period is July to September. Average annual rainfall is 500 mm, with more than two-thirds of this rainfall occurring during the Monsoon period.

4.5 Biological Environment

4.5.1 Flora

Trees like the kikar (Acacia arbica), shisham or tahli (Dalbergia sissoo), ber (Zizyphus jujuba), toot (Morus marlaccae), sharin (Albizzia lebbek), dharek (Malia azerdarach), phulahi (Acacia modesta), neem (Melia indica), and peepul (Ficus indica) are planted for shade. The growth in Rakhs (forests) is composed mainly of three kinds of trees: jhand (Prosopis spicigera), karril (Capparis aphylla), and vann or jal (Salvadora obeoides). Occasionally, peelu (Acacia loucophhloea) and farash (Tamarix articulate) are also found. Pilchi (Tamarix gallio) is found on moist sandy soil along the rivers, and is used for wicker-work, and basket making among other activities.

4.5.2 Fauna

Wolf, pigs, peafowls, and jackal are the main wild animals in the district. Wolves are more common in the lowland wastes of Chunian tehsil; jackals are common in all areas of the district. Bengal fox and the small Indian Mongoose are also found in Kasur district.

Birds including sparrows and crows were observed in the vicinity of the project area. And during the interview of the local peoples, they reported the presence of jackal's and dogs in the night.

4.5.3 Protected areas / National Sanctuaries

Following are the main Wildlife Protected Areas in Kasur district:

- The Changa Manga Irrigated Forest Reserve Kasur district: provides sanctuary to Nilgai, pig, peafowl, hare, hog deer, jungle cat, wild boar, golden jackal, axis deer (axis

axis), and There is a Vulture Center in the forest reserve where Asiatic Vultures are being restocked in an effort to bolster the vulture population, especially the Gyps Bengalensis vulture

- Rakh Deosial and Rakh Bhunike Irrigated Forests Kasur district
- Ghamaghar Lake, a protected lake Kasur district, is a brackish lake of international importance. It is a wetland and provides sanctuary to a large number of migratory birds that frequent the lake during the winters
- Rasool Barrage Kasur district is also an important wetland providing sanctuary to game birds

There is no wildlife sanctuary or game reserve or any other protected area within the project area.

4.6 Socioeconomic Baseline

This section outlines the results of the social assessment, through primary and secondary data, and other studies, with information and/or data disaggregated by gender, vulnerability, and other social groupings, including:

a. Define, identify, and enumerate the people and communities to be intervened by the proposed development interventions; describe the likely impacts on the people and communities taking social, cultural, and economic parameters into account.

b. discuss the project's impacts on the poor, indigenous and/or ethnic minorities (if any), and other vulnerable groups; and

c. Identify gender and resettlement impacts (if any), and the socioeconomic situation, impacts, needs, and priorities of women.

4.6.1 Reconnaissance Field visit

A reconnaissance visit to the project, before conducting detailed survey was conducted by the consultant, that helped in collection of necessary data/information for primary assessment through consultations with project stakeholders including project beneficiaries and project affected persons.

4.6.2 Data Collection and Field Survey

The Consultant conducted field survey/investigation on various socio-economic aspects to assess the existing socio-economic environment of the project as well as identify likely impacts under a changing situation with and without the proposed Project. Accordingly, the social study covered the beneficiaries, the affected people and concerned stakeholders in the area and elicited their views / suggestions for mitigation / enhancement of different types of impacts.

4.6.3 Community/Stakeholders' Participation

Community consultations with different stakeholders, beneficiaries and affected communities of the Project Area were organized to facilitate stakeholders' / peoples' participation in the project activities of the proposed project and their views and feedbacks were incorporated for planning/preparation of the project. Such consultations would strengthen the commitment of a wide cross-section of the affected

people, public representatives, government employees and professional groups by giving them an opportunity to participate in key decisions.

4.6.4 Population

Population According to census 2017 total population of district is 3494,556. Average annual growth rate is 2.03

4.6.5 Religion

The main religious groups in the area are Muslims and Christians. The population of the surveyed settlement is predominately Muslims

4.6.6 Language

Punjabi is the most common language spoken by majority of population in the area. Urdu is spoken as secondary language.

Table 4-1: Language Distribution

Urdu	6.2%
Punjabi	88.2%
Sindhi	Negligible
Pushto	0.1%
Balochi	Negligible
Siraiki	0.7%
Others	4.7% (includes Brahvi etc.)

4.6.7 Agriculture

The district belongs to the Northern Irrigated Plains Agro-Ecological Zone of Pakistan. Almost 32% of the total population of the district is engaged in agriculture and its allied livestock breeding. Irrigated areas are irrigated through canals and tube wells. Main crops of the district include sugarcane, wheat, rice, maize, cotton, jowar, bajra, moong, masoor, maash, rapeseed & mustard, sunflower, barley, gram, sesanum, guar seed, linseed, sun hemp, and fenugreek.

Fruits of the district include citrus, guavas, mango, peaches, jaamun, phalsa, leechee, bananas, plum, pomegranates, pears, and apricots.

Main vegetables are potatoes, onions, carrots, cauliflower, garlic, okra, turnips, bottle gourds, peas, brinjal, chilies, tomatoes, coriander, mint, and turmeric..

4.6.8 Educational Facilities

The following table shows the details of educational facilities of the district as per Punjab Development Statistics 2018-2019:

Table 4-2: Education Institutes in District

Institution	Boys/Girls	Institution	Boys/Girls
Primary Schools	551/506	Middle Schools	113/141
Secondary Schools	89/77	Higher Secondary	07/21
Degree colleges	10/11	Other Higher Secondary[1]	-/02
Other Degree Colleges[2]	08/07	Technical Training Institutes[3]	03/02
Vocational Institutes[4]	-/03	Commercial Training Institutes[5]	03/-
Universities[6]	01	Govt. Mosque Schools	03/01
Medical Schools	–	Engineering Schools	–

Figure 4-3 represent Educational Institutes present in project area:

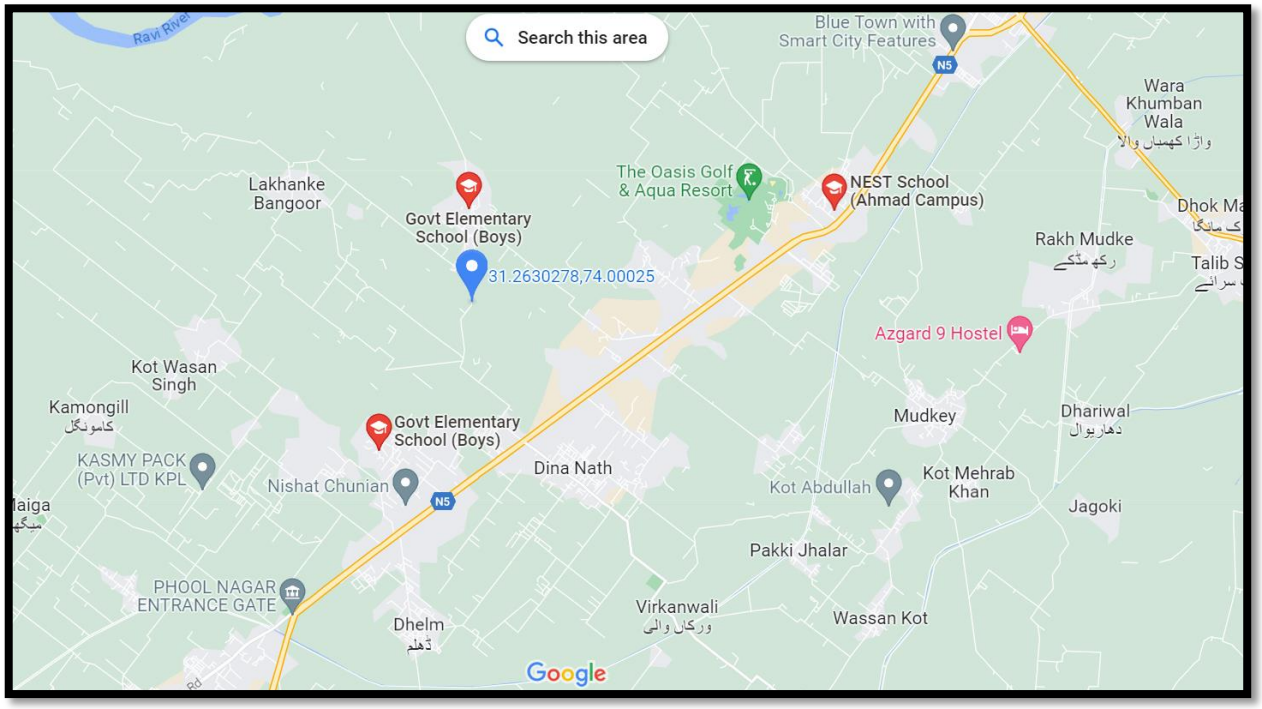


Figure 4-3: Education Institutes in Project Area

4.6.9 Gender Situation Analysis

Women in the project area have no recognized role in the authority structure of the city. Most of the women stay at home and only travel outside the village in case of visiting relatives, and weddings and to hospitals in nearby towns. However, the traditional attitude of not sending girls to school is changing now, because parents realized and understand that basic education is necessary for each individual without the discrimination of sex.

4.6.10 Industries

Project site is located in industrial area surrounding by cluster of industries including:

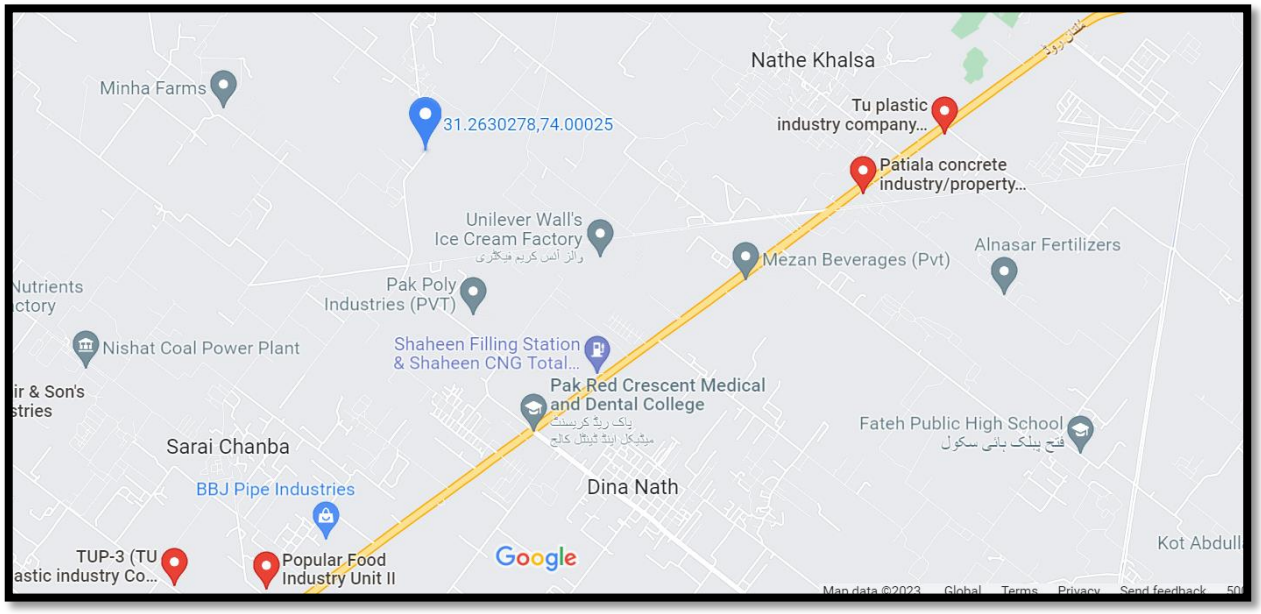


Figure 4-4: Industries in Project Area

4.6.11 Health Facilities

The District Health Officer (DHO) is overall in charge of health services provided in the district. The DHO is supported by doctors, paramedics, technicians, and other support staff. The following table shows the number of health care institutions in the district as per Punjab Development Statistics 2018-19:

Table 4-3: Health facilities in District

Institution	No./Beds	Institution	No./Beds
Government Hospitals	07/351	Dispensaries	24/-
Rural Health Centers	12/242	Basic Health Units	82/164
T B Clinics	01/-	Mother Child Health Centers	08/-
Private Hospitals	–	Sub-Health Centers	–
Private Health Care Providers[7]	17		

Health Facilities in Project Area are given in fig 4-5

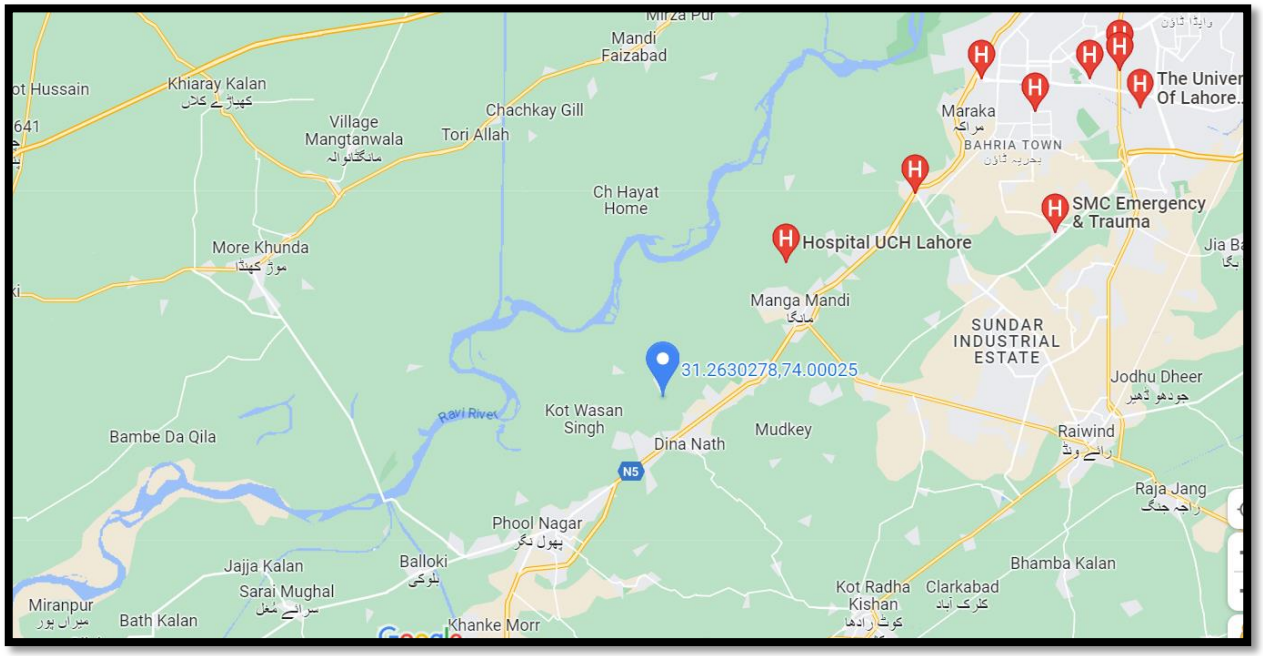


Figure 4-5: Health Facilities in Project Area

4.7 Lab Reports of Environmental Analysis

Water and Air quality was tested by Punjab EPA certified laboratory. Grab sampling was conducted at existing water bores, which are being used by the community. The parameters were analyzed against Punjab Environmental Quality Standards (PEQS). Lab reports are annexed as Annexure IV

4.8 Site Suitability

Wetlands

There are no wetlands in the project area.

Endangered Species

There are no endangered species of flora and fauna in the project area.

Wildlife Sanctuaries and Game Reserves

No wildlife sanctuary or game reserves are located in the vicinity of the project area.

Critical Habitats

No wildlife sanctuary or game reserve (Critical Habitats) exists in the project area

5 SCREENING OF POTENTIAL ENVIRONMENTAL IMPACTS AND MITIGATION MEASURE

5.1 GENERAL

This Chapter identifies the potential impacts (positive and adverse) on the physical, biological and socio-economic environment of project area due to proposed project. It also identifies measures that will help to mitigate the adverse environmental and social impacts (if any) and it will enhance positive impacts of the project. Impacts are assessed by analyzing their magnitude and sensitivity, which is a legal requirement

5.2 Anticipated Impacts of Project

Subsequent to the characterization, appropriate mitigation measures were identified, in order to minimize, if not completely eliminate, the adverse impacts associated with project activities. The impact characterization of the predicted impacts and mitigation measures are discussed below:

5.2.1 Project Location

The impacts associated with the project siting is those which relate to its location at the designated site. These impacts are different from those which are associated with the project's construction and operational phases. The construction and operational impacts are associated with the activities such as land clearing, waste disposal, whereas the siting impacts relate to the mere presence of a facility at the given location. Following mitigation measures are adopted:

- The land use of project is not changed as number of industries and agricultural fields are already present in surroundings.
- Project has been designed on sustainable basis with all utilities like water, natural gas, sewerage system, drainage and electrification.
- Energy efficient products and technologies are used to the extent possible to provide comfort and better lighting facilities as well to cut short the energy crisis if happens in the aforesaid project.
- The design of the project is adopted in a manner that minimizes the changes in the topography, landscape and damage to the natural vegetation.

5.2.2 Pre-Construction/Design Phase Impacts

Incompatible layout plan and engineering design of the project's structures can undermine the overall aesthetic beauty and ambience of the project area. Also, low utilization of the available space and not designing the structures considering, the prospective and futuristic needs can result in structures with low social acceptability and functionality. This impact will be temporary and moderate negative in nature.

Inappropriate structure may rupture during the earthquake or any other natural incidence and may cause fire or hazard at the site. Following measures are adopted:

- ✓ All structural, layout and engineering are carried out in strict accordance withthe applicable bylaws and engineering parameters.
- ✓ The said project is designed according to international standards forthe prevention and control of fire and explosion hazards, including provisions for segregation of process, storage, utility, and safe areas.
- ✓ Safety distances should be derived from specific safety analysis for the facility, and through application of internationally recognized fire safety standards.

5.2.3 Construction Phase Impacts

Construction phase is the most significant part of the project with respect to environmental considerations, since most of the impacts are likely to take place during this period. Various construction activities will invariably create environmental disturbances, which may have impacts on the physical, biological and social environment of the area and nearby communities.

Such impacts include the following:

- Physical Environment
  - Soil erosion and degradation
  - Air quality deterioration
  - Water Quality (Surface and ground water)
- Biological Environment
  - Loss of Vegetation
  - Damage to wildlife
- Socio-economic Environment
  - Traffic congestion
  - Noise and vibration
  - Safety hazards, Public health and nuisance issues

5.2.3.1 Soil erosion and contamination

Following impacts on soil quality are envisaged due to proposed project interventions:

- Excavation, land clearing and land levelling activities can destabilize the surrounding land surface;

- The unspent materials and debris produced from consumed up materials, if left as such and allowed to mix with soil underneath, can degrade the quality of receiving soils;
- Leakages of oils, lubricants, chemicals, and other similar substances from their storage sites and from engines of the generators, machines, equipment and vehicles can spoil the receiving soils and may undermine ability of the spoiled soils to support growth of vegetation and plants.

However, it is envisaged that due to project activities, the impacts is minor and limited to project area only.

Mitigations:

- All spoils will be disposed of at designated site and the site will be restored back to its original conditions;
- Avoid use of heavy machinery on wet soil to prevent damage to soil structure;
- Land clearing, leveling and grading should be minimized.
- Provision of such native species of trees which help in reducing the erosion.
- Vehicles and equipment will not be repaired in the project site. If unavoidable, impervious sheathing will be used to avoid any soil contamination.
- For the domestic sewage from the construction site, septic tanks will be constructed having adequate capacity.
- Waste oils (if any) will be collected in drums and sold to the recycling contractor.
- Domestic solid waste will be disposed in a manner that does not cause soil contamination/water contamination.
- All the unspent and left-over materials be completely removed offsite upon completion of construction and the site be restored to original or near to original condition.

5.2.3.2 Air Pollution

Air quality can be affected by fugitive dust emissions from construction machinery; dust from the unpaved surface and construction vehicles. Emissions may be carried over longer distances depending upon the wind speed, direction, temperature of surrounding air and atmospheric stability. Besides, multifarious construction activities and increased vehicular traffic (construction vehicles) would also contribute to the localized airborne dust. The larger sized particles, under influence of gravity, tend to settle down in the immediate vicinity of the source. The Suspended Particulate Matter (SPM) tends to remain suspended in the environment for much longer and persistent time and is an environmental hazard. The objectionable impacts of settling of the suspended dust would be its dry deposition on vegetation, motor vehicles, structures, and other exposed surfaces. Exhausts from fossil fuel burning in the

construction machinery will also deteriorate local air quality. Similarly, exhausts from generators can also have impacts on air quality in the vicinity. The overall impact on the quality of air during the construction phase was be monitored, however, it was temporary and limited to the project's implementation phase only.

Mitigation Measures

The construction phase impacts of the proposed Project could be effectively mitigated by the implementation of simple procedures by the Contractor including but not limited to the following:

- All vehicles, machinery, equipment and generators used during construction activities should be kept in good working condition and be properly tuned and maintained in order to minimize the exhaust emissions;
- Open burning of solid waste at construction site should be strictly banned;
- Preventive measures against dust should be adopted for on-site mixing and unloading operations;
- Construction materials (sand, gravel, and rocks) and spoil materials will be transported through trucks covered with tarpaulins and all vehicles (e.g., trucks, equipment, and other vehicles that support construction works) will comply with the PEQS for carbon emissions and noise;
- Regular water sprinkling of the site should be carried out to suppress excessive dust emission(s);
- Emissions from power generators and construction machinery are important point sources at the construction sites. Proper maintenance and repair is needed to minimize the hazardous emissions;
- Construction equipment is generally left idling while the operators are on break or waiting for the completion of another task. Emissions from idling equipment tend to be high. Existing idling control technologies, which automatically shut the engine off after a preset time can reduce emissions, without intervention of the operators;
- PEQS applicable to gaseous emissions generated by construction vehicles, equipment and machinery should be enforced during construction works;
- Construction workers should be provided with masks for protection against the inhalation of dust;
- Regular monitoring of air quality in accordance with the formulated environmental monitoring plan (given in EMP).
- Vehicle speed in the project area should be prescribed not more than 20 km/ hr and controlled accordingly

5.2.3.3 Noise and Vibration

The noise and vibration is produced due to the operation of construction machinery and equipment like bulldozers, scrapers, excavators, compactors, trucks, large capacity dumpers, graders, heavy duty cranes,

concrete batching plants and stone crushers. The operation and movement of such equipment increase the noise and vibration in the Project Area. Noise and vibration are perceived as one of the most undesirable consequences of construction activity. The above machinery is expected to generate noise levels that would be severe in the project area. This impact is temporary and moderate in nature.

Mitigations

- For the construction machinery generating noise level in excess of that prescribed in PEQS, Contractor will make arrangements to bring the noise level within applicable limits (including proper tuning of vehicles and mufflers/silencers).
- Movements of the trucks and other construction machinery causing high noise levels must be restricted at night time to avoid disturbance to the nearby locality.
- Truck drivers should be instructed not to play loud music at night and stop use of horn.
- Proper noise barrier boundary walls will be built on asphalt/ concrete plants which come close to any locality.
- Providing the construction workers with suitable hearing protection like ear cap, or earmuffs and training them in their use.
- Use of low noise machinery, or machinery with noise shielding and absorption.
- Contractors shall comply with submitted work schedule, keeping noisy operations away from sensitive points; implement regular maintenance and repairs; and employ strict implementation of operation procedures.
- PEQS standards for noise will be followed for compliance.

5.2.3.4 Impact on Water Resources (Surface and Groundwater Contamination)

The project activities that can contaminate soil may also contaminate the surface water and groundwater. These include.

- Solid waste disposal
- Sewerage disposal
- Equipment/ vehicles maintenance
- Spillage/ leakage of fuels, oils and chemicals
- Camp site sanitation facilities.

Mitigations

- Wastewater from construction sites should not be disposed into the water bodies;
- Soil erosion should be avoided in watershed areas to protect water resources;
- Water required for construction may be obtained in a sustainable way from alternate

water sources;

- Provision of septic tanks must be ensured to treat the construction waste and wastewater from campsites.
- Septic tanks and sumps will be built at a safe distance from any water hole, stream or dry stream bed, to prevent entry of surface water, and the bottom of the sump will be kept above groundwater level.
- Prohibit washing of vehicles and machinery at the project site.
- No waste should be disposed in the open.
- PEQS and WHO guidelines will be used for any effluent generated from the project related activities, before its discharge into any surface water resources.

5.2.3.5 Solid/Construction Waste Generation

Large quantities of waste is produced at the different stages of the project construction. Without a proper solid waste management system, solid waste may result in odor, breeding ground for disease vector, and aesthetic concerns. Solid waste may result in leachate production and percolation in groundwater. The impact of solid waste was moderate in nature.

Mitigations:

- Three Rs: "Reduce, Reuse, Recycle" waste management hierarchy will be adopted.
- Recording system for the amount of waste generated, recycled and disposed;
- Disallow siting for work camps, including waste dump sites, in a distance closer than one km toany inhabited areas;
- Incorporate technical design features for refuse collection containers at sites that would minimizeburning impacts;
- Devise plan(s) for safe handling, storage and disposal of harmful materials;
- Burning of waste shall not be allowed in any case; and
- All recyclable waste should be used on site or sold out for reuse in market.
- Solid waste generated during construction and camp sites should be safely disposed of at designated waste disposal sites.
- Proper labelling of waste containers, including the identification and quantity of the contents should be carried out.
- Construction workers and supervisory staff should be encouraged and educated to practice waste minimization, reuse and recycling to reduce quantity of the waste.
- Waste disposal plan must be reviewed during the entire construction phase in the light of changing weather conditions.

- Close coordination should be carried out with concerned department for the proper disposal of construction waste.

5.2.3.6 HSE Issues

Worksite related accidents can result in injuries and casualties. Workers may be exposed to unsafe and/or unfavorable working environment due to storage, handling and transport of hazardous construction material. The construction activities and vehicular movement at construction sites and access service roads may also result in roadside accidents particularly inflicting local communities who are not familiar with presence of heavy equipment and machinery. The impact is medium adverse in nature.

Mitigations:

- The contractor will be required to strictly follow WB EHS Guidelines.
- Providing basic medical training to specified work staff and basic medical service and supplies toworkers;
- Work safety measures and good workmanship practices should be followed by the contractor toensure no health risks for laborers;
- Use of PPEs by workers must be ensured by the contractors; and
- Timely public notification on planned construction works.

5.2.3.7 Impacts on Public Health and Safety Hazards

The construction activities and vehicular movement at construction sites may result in roadside accidents particularly inflicting local communities who are not familiar with presence of heavy equipment. Quality of groundwater and surface water resources available in the nearby local communities may be affected due to the construction activities, oil spillage and leakage, roadside accidents, etc. The project also have potential of air (dust pollution), noise and vibrational impacts on nearby community. The labor works with different transmittable diseases may cause spread out of those diseases in the local residents. The construction areas located near the residential, settlements, may cause accident for the people moving near to those areas. Conflicts may arise between the local community and the construction workers, which may be related to religious, cultural or ethnic differences, or based on competition for local resources.

Mitigations

- Contractor will ensure the provision of medicines, first aid kits, emergency vehicles, etc. at the work place.
- The laborers with different transmittable diseases will be restricted within the construction site.
- Ensure that the site is restricted for the entry of irrelevant people particularly children.

- Training of workers in the construction safety procedures, environmental awareness, and equipping all construction workers with safety boots, helmets, gloves, ear plugs, and protective masks, and monitoring their proper and sustained usage.
- Provision of proper safety and diversion signage, particularly at urban areas and at sensitive/accident-prone spots.
- Setting up speed limits in close consultation with the local stakeholders.
- The mitigation measures provided for air and noise shall be adopted to reduce the air pollution, noise pollution and vibrational impacts on nearby community.
- Defensive driving practices will be inculcated in the project drivers through trainings, posters and other similar measures.
- Vehicle speeds of 20 km/hr at the project site will be implemented.
- Personnel injuries risks can be mitigated through the provision of appropriate training and emergency response procedures.
- The contractor will ensure better working conditions for its employees.
- Firefighting equipment will be made available at the site offices and construction workers. Construction staff will be provided firefighting training.
- Road signage will be fixed at appropriate locations to reduce safety hazard associated with project-related vehicular traffic

5.2.3.8 Occupational Health and Safety Occupational Health and Safety (OH&S)

OH & S related impacts may arise during construction phase activities including clearing of earth, levelling, compaction, carpeting, pavement finishing and testing & commissioning. Eye injury can be caused by stone or metal particles. Hazard of being hit by falling objects, major hand-arm and whole body vibration hazards, skin and respiratory tract irritation from exposure to cement dust, overexertion and awkward postures etc. is another impact. Welding hazards include electric shock, fumes and gases, fire and explosions, falls from height, eye and head injuries etc. Security as well as the safety of the Contractor and Consultant staff is major issue. Operating mechanical and electrical equipment trigger the H&S issues e.g., struck by moving vehicles or other equipment, slips or trips, struck by flying objects, such as dirt or splashed fluids, caught in pinch points, shear points, crush points, falling from machine etc. Considering these consequences, this impact temporary and medium probability.

Mitigations

- Providing basic medical training to specified work staff and basic medical service and supplies to workers;

- Training of workers in construction safety procedures, environmental awareness, equipping all construction workers with safety boots, helmets, gloves and protective masks, goggles, shields and monitoring their proper and sustained usage;
- Contractor will ensure the provision of medicines, first aid kits, ambulance etc. at the camp site;
- Contractors will instruct their staff to use Personnel Protective Equipment (PPE) (e.g., wire containment, displaying warning signs along the work site, communicating advance warnings to mats) to enhance the safety; and
- Safety lookouts will be built to prevent people and vehicles from passing at the time of hot or cold work; and
- An emergency management plan must be devised by the contactor in close coordination with the provincial emergency services.

5.2.4 Operation Phase Impacts

5.2.4.1 Air Emissions

Air emissions from the project are relatively small. Particulate emissions are typically not significant. Fugitive dusts and emissions may likely to occur. Other potential sources for air emissions are combustion products (nitrogen oxides, sulfur dioxide, particulate matter, carbon monoxide) from standby generators and combustion products from vehicles used for project activities. The emissions from standby generators will be less in concentration.

MITIGATION MEASURES

The following mitigation measures will be implemented. The proposed mitigation measures to reduce the impacts on air quality during the proposed operation activities are:

- Monitoring of Ambient air parameters (Particulate matter, SOx, NOx) emissions should be carried out on regular basis to ensure compliance with the PEQS.
- Plantation of indigenous trees within the premises and along the boundary.
- Proper tuning and maintenance of generator.

RESIDUAL IMPACT

If proper mitigation measures are effectively implemented, the residual impact of the proposed activities on the area's air quality is expected to be low in terms of significance.

5.2.4.2 Noise

POTENTIAL IMPACTS

The main sources of pollution from noise are during raw material and finished good loading and unloading, vehicle movements, operation of machines. The increased noise may be a source of disturbance to workers, working near to the machines. Noise level during operation phase of unit will be limited to operational site. Workers could be exposed to high noise levels, however only concerned staff will be working in the area with required personal protective equipment (PPE) to minimize or reduce the noise exposure.

MITIGATION MEASURES

The following mitigation measures will be undertaken in order to further reduce the noise levels:

- Effective noise suppression design and plan will be made for all noise producing equipment i.e. high noise generating machines will be kept in isolation from other machines to minimize the overall cumulative noise.
- It will be ensured that generators, vehicles and other potentially noisy equipment are in good condition. Noise from generators, vehicles, other equipment and machinery will be kept to the minimum through regular maintenance.
- Noise monitoring will be carried out periodically.

RESIDUAL IMPACTS

Implementation of the mitigation measures proposed above will result in negligible to no residual impact due to unit noise on the surrounding environment.

5.2.4.3 Traffic

The operational phase of the said unit will result in increased traffic. However, the impact will be minimal. Vehicles will be well maintained to prevent unnecessary exhaust emissions and drivers will be appropriately trained.

MITIGATION MEASURES

The following mitigation measure will be implemented.

- Nighttime driving of project vehicles will be limited where possible.
- Vehicles will remain confined to defined access.
- Speed limits will be maintained.
- Road signage relevant to the project traffic will be placed, where necessary.
- Community complaint register and other means will be adopted for the community to complain about non-adherence of traffic to speed limits, safe driving and other safety related concerns.

- All vehicle drivers will be trained in community safety aspects. Drivers will be trained in responsible and safe driving practices; safe speed limits for vehicles will be followed.

5.2.4.4 Solid Waste

There will be generation of packaging waste which will be recycled and reused as much possible.

MITIGATION MEASURES

- Take measures to ensure paperless environment. There should be maximum utilization of electronic media.
- There should be a control over issuance of paper to restrict its excessive use.
- Separate waste bins will be placed for different type of wastes plastic, paper, and metal etc.
- No waste will be dumped at any location outside the plant boundary.
- Records of all waste generated will be maintained. Quantities of waste disposed, recycled, or reused will be logged on a Waste Tracking Register.
- Training will be provided to personnel for identification, segregation, and management of waste.

5.2.4.5 Wastewater

Wastewater will be disposed off in main Drain after proper treatment through effluent treatment plant. Municipal wastewater coming from various municipal works, such as cleaning will be generated, which will be treated via a Septic Tank

5.2.4.6 Occupational Health and Safety

This section discusses the occupational health and safety impacts of the operation of unit. Physical hazards may include exposure to same-level fall hazards due to slippery conditions. In a variety of situations, a worker can be exposed to lifting, carrying, and repetitive work and work posture injuries.

MITIGATION MEASURES

In order to reduce the physical hazards and other health and safety issues that may be encountered at workplace, following will be followed.

- Proper training will be provided for the proper usage of machineries and personal protective equipment (PPE) will be provided. It will be ensured that the individual who has received the correct training is operating a particular machine.
- Regular housekeeping practices will be ensured by keeping the floor dry and during washing; proper protective equipment are being used. Restricted entry should be ensured during washing.

- Training of staff in the handling of lifting materials.
- Timely maintenance and repair of electrical equipment will be conducted.
- Implementation of work rotations, provision of regular work breaks.
- At workplace, first aid facilities will be maintained at readily accessible places.

5.2.4.7 Socioeconomic Impacts

A summary of potential socio-economic impacts of the project is presented in Table below.

Table 5-1: Potential Socioeconomic impacts of the project

Impact	Beneficial	Adverse
Economic	Employment generation Procurement of equipment and services Local authority business tax / rates revenue Increase in property value	Negative economic Impacts are not anticipated
Social	Indirect beneficial community impacts from employment Provision of training to employees and workers	Risks of occupational and environmental health issues.

By implementing the following mitigation measures, impact to community can be minimized.

- All vehicle drivers will be trained in community safety aspects.
- The company will maintain a social complaint register at the site to document all complaints received from local communities. The register will also record the measures taken to mitigate these concerns.
- It will be ensured that generators, vehicles, and other potentially noisy equipment used are in good condition. Noise from generators, vehicles and other equipment will be kept to the minimum through regular maintenance.
- Maximum number of unskilled and semi-skilled jobs will be reserved for the local communities.

5.3 Potential Environmental Enhancement Measures

5.3.1 Employment Opportunities

The project has positive impact on economic condition of locals. Employment opportunities will be generated due to said project activities. The project will generate approximately 15 jobs during operation phase of the project and 15-20 during construction phase

Similarly, the operation of the project will create far greater number of indirect income resources for example income resource for transporters for the transportation of the raw materials, procurement of required goods from local market etc.

Overall the project will have a positive impact on the employment opportunities of Pakistan.

5.3.2 Greenbelt Development

Apart from functioning as a pollutant sink, green belts provide other benefits like:

- Green belt helps in noise abatement for the surrounding area. Thus, it is recommended as noise barriers.
- Green belt helps in achieving bio diversity by providing possible habitats for birds and animals.
- Green belts increase the aesthetic value of the site.

Adequate number of small plants and trees are planted along the periphery of the unit and available open spaces.

6 ENVIRONMENTAL MANAGEMENT PLAN

6.1 GENERAL

This chapter summarizes the various mitigation measures as outlined previously in this EIA Report that will be implemented during the construction, operational and decommissioning stages of project. It does not discuss further the mitigation measures which have been adopted within the design and planning of the project, as these are comprehensively covered in previous section of this EIA Report. Outline and key features of the EMMP for operations phase of the aforesaid project is presented in the sub-sections below. As per the environmental legislation in Pakistan, the compliance status of the conditions mentioned in the construction should be submitted along with other documents to the environmental protection agency to obtain confirmation for compliance and Environmental Approval for project operation. Even after implementation of the suggested mitigation measures, the impact may remain significant, and requires regular environmental monitoring.

6.2 Objectives

An Environmental Monitoring Plan (EMP) was outlined alongside Environmental Management Plan to ensure all the corrective actions to counter adverse impacts which gives a detailed EMMP. The EMMP will serve as a principal execution module of the project that would not only mitigate adverse environmental impacts during the installation and the operational phase of the project but also ensures that environmental standards and good in-housekeeping are being practiced. Continuous environmental monitoring is exercised to ensure that preventive measures are in place and effective to sustain environmental integrity.

The key objectives of EMMP are:

- To outline functions and responsibilities of persons associated with the commencement of the proposed project
- To state and implement standards and guidelines which are required under environmental legislations particular in context to the proposed project commencement
- To facilitate the implementation of the mitigation measures by providing the technical details of each Project's impact and proposing implementation schedule of the proposed mitigation measures
- Define a monitoring mechanism and identify monitoring parameters to ensure that all proposed mitigation measures are completely and effectively implemented
- Identify the resources required to implement the EMMP and outline corresponding financing arrangements

6.3 MANAGEMENT APPROACH

The organizational roles and responsibilities of the key players are summarized below:

Proponent*:* The project proponent will undertake overall responsibility for compliance with the EMP. Concerned Departments will carry out verification checks to ensure that the contractors are effectively implementing their environmental and social requirements.

Contractors*:* The contractors will implement the majority of environmental and social mitigation measures. The contractors will carry out field activities as part of the project. The contractors are subject to certain liabilities under the environmental laws of the country, and under its contract with proponent.

6.4 COMPONENTS OF THE EMP

The EMP consists of the following:

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

6.5 ENVIRONMENT MANAGEMENT PLAN

It lists all the mitigation measures identified in the EIA and the associated environmental or social aspect in line during operational phase with the administrative framework involving all the responsible implementing authorities who are required to take the planned actions/measures. It enhances project benefits by reducing its impacts and making it environmental friendly.

Objective	Management Action	Responsibility	Time framework	Residual impact
Construction phase				
Employment Opportunities				
To promote the employment of local persons	Recruitment of local workers will be undertaken without discrimination and in accordance with company recruitment policy by contractors involved in construction	Contractor	On commencement of construction activities	Unemployed people of area will get job opportunities and their standard of living improved
To promote the use of local service providers	Local procurement of goods and services will be undertaken wherever possible and cost effective and where practicable to the project	Contractor	On commencement of construction activities	Indirect job opportunities
Safety during construction				
To ensure safety on construction site	• Safety signage will be put in relevant places within the construction site • Construction drivers are subjected to public safety awareness • Reckless driving by construction workers will be prohibited and monitored • Workers will be given PPEs such as; helmets, mask, ear-plugs/muffs, safety boots, etc. and its use will be strictly enforced • Workers will be trained on the regular basis regarding personal safety • Incidents will be reported directly to the concerned authority	Contractor/Environmental manager/EHS manager	On commencement of construction activities	Safety of workers will be ensured by implementing proposed mitigation measures
Construction waste management				
To prevent the contamination of soils and water resources due to inappropriate management and disposal of waste	• The construction site will have litter bins for waste collection • Recycling or reuse of waste wherever possible. • Application of a good strategy to collect, remove and safely dispose of waste on	Contractor	Throughout construction stage	Waste will be disposed of/reused/ recycle or resale as per practices of area

	daily basis to ensure a clean environment in the factory site • Integrated waste management system will be adopted for the proper management of the waste at site • At the end of the construction phase, left-over waste will be removed by using the standard waste management procedures • All the idle machinery and equipment will be immediately removed from the site • Scrap and the debris will be removed from the site at the end of the construction stage after appropriate segregation of the material			
Pollution control management				
To contain spillages	• Proper maintenance of construction vehicles and equipment will be undertaken • Appropriate environmental security measures including shovels and plastic bags etc will be provided to prevent accidental release to ground. • Appropriate procedures and protocols will be established and monitored for materials transport and handling whilst on the site.	Contractor	On-site establishment	Potential for accidental release of materials during transport and handling on the site will be minimized.
Protection of biodiversity				
To avoid unnecessary disturbance of and quick recovery of biodiversity in the plant site	• Avoid destruction of biodiversity outside the designated factory construction site • Minimize clearing of vegetation during construction • Surface soil excavated during	Contactor	Throughout construction phase	Vegetation loss cannot be avoided, but successful restoration, improvement and long-term management of the surrounding areas and maintenance of planted trees

	construction to be placed back on the sub-soil to fast vegetation recovery • Prepare and implement an appropriate landscaping programme to help in re-vegetation of affected project areas after construction • The flora of the site will be restored at the end of the construction phase by landscaping and planting native vegetation			will be provided
Air quality & dust management				
To minimize the dust entrainment during construction	• Regular surface wetting will be implemented on dusty sections in the factory construction site • Strict on-site speed controls will be enforced for construction vehicles • All trucks hauling soil, sand and other loose materials will be covered • No excavation activity will be carried out during windy days • Fuel-efficient and well-maintained haulage trucks will be employed to minimize exhaust emissions • Construction workers will be sensitized on measures to reduce air pollution	Contractor	On commencement of construction activities	Dust propagation was limited to construction area and did not influence local community. However workers will be supplied with dust masks especially on dry days.
Noise				
To minimize disturbance due to noise	• Loading and unloading of materials will be done carefully to reduce noise disturbances to surrounding households • Residences are at a safe distance from site so no disturbance is envisaged. • Drivers will be instructed to avoid unnecessary gunning of vehicles, hooting and buzzing.	Contractor	On commencement of construction activities	Noise level will be within PEQs

	• Regular maintenance of the machinery will be done to reduce the noise • Vehicles will be tuned on regular basis			
Occupational health & safety				
To ensure healthy and Secure/safe environment in the construction site for all workers	• Management will ensure that fire extinguishers are located in strategic and visible places • All vehicles and construction equipment will be under control of competent personnel • Inspection of material and harmonization to the occupational health and safety standards. • Adequate security for workers will be be provided during construction • Sensitize workers to operate in teams	Contractor	Throughout construction phase	Record of all incidents will be maintained and reported to EHS manager.
Operation phase				
Wastewater management				
Degradation of surface waters quality	Wastewater will be disposed off in main Drain after proper treatment through effluent treatment plant. Municipal wastewater coming from various municipal works, such as cleaning will be generated, which will be treated via a Septic	Management	Throughout project life cycle	None
Noise & vibration				
To minimize disturbance of communities due to noise	• All the machinery will be installed and operated in a closed hall • Equipment should be regularly serviced. • Ensure that the workers are wearing PPE's (ear plugs, ear muffs etc.) where	Management	Throughout project life cycle	Noise level will be based on PEQs

	engineering control is not applicable to reduce the impact of noise • Schedule different noisy activities to occur at the same time as less frequent noise activities would be less annoying. • A thick greenbelt is developed all around the plant which will be acting as noise barrier. • Introduction of control and monitoring rooms having good sound insulation properties. • All the workers will be provided with ear plugs. • All the transporters will be advised to carry out regular maintenance of their vehicles.			
Traffic & transport				
Increased heavy vehicles traffic both locally and nationally.	• Restricting delivery hours to reduce noise nuisance; avoid heavy truck movements in the night hours will be considered whether deliveries should be scheduled to avoid peak times to reduce congestion	Management	Throughout project operation	The traffic has the potential to contribute to congestion and lead to complaints due to noise/vibration nuisance on a local basis. However, the study indicates that there will not be a significant impact.
EHS				
To minimize loss work injury/hazards/incidents/ accidents	• Training regarding EHS should be given on the regular basis • Workers will be given PPEs such as;	Environmental manager/EHS	Throughout life cycle of project	Potential of injuries will be minimized

	helmets, mask, ear-plugs/muffs, safety boots, etc. • It should be strictly enforced to wear PPEs while working • Workers will be trained on the regular basis regarding personal safety and disaster management • Incidents should be reported directly to the concerned authority			
First aid				
To ensure safety and health	• First aid box will be available at the site • First aid training will be given to the employees on the regular basis • Numbers of all the concerned/authorized persons that will be contacted in the case of emergency will be displayed on-site	Environmental manager/EHS	Throughout life cycle of project	None
Fire hazard				
To prevent any disaster	• Firefighting equipment including DCP type fire extinguisher, CO2 Type extinguisher, sand buckets, sand drums with spade and hose pipe cabinet will be installed inside the plant • All the equipment will be placed at strategic locations where the risk of out-burst of the fire is high. • Smoking will not be permitted in the vicinity of the plant • Regular site inspection will be done to eliminate all the chances of the hazards • Checking and maintenance of the fire-fighting equipment will be carried out on the regular basis	Environmental manager/EHS	Throughout life cycle of project	Potential of disaster will be minimized by suggested mitigation measures implementation
Employment				
To provide job	• During this phase, skilled and unskilled	Management	During construction	Direct and indirect jobs

opportunities and helping in improving living standard of people	labour will be required. • Employment opportunities for the un-skilled workers will therefore increase which will enhance the positive benefits for the local people who are in dire need of income for sustenance. • Indirect opportunities for employment will arise from the provision of services to the construction teams, such as sale of raw-material such as cement, bricks, sand etc., as well as food and beverages for the labour and after completion of construction phase serve as a permanent business opportunity.		and operation phase	
Solid Waste Management				
Domestic and packaging waste	• Take measures to ensure paperless environment. There should be maximum utilization of electronic media. • There should be a control over issuance of paper to restrict its excessive use. • Separate waste bins will be placed for different type of wastes plastic, paper, and metal etc. • No waste will be dumped at any location outside the plant boundary. • Records of all waste generated will be maintained. Quantities of waste disposed, recycled, or reused will be logged on a Waste Tracking Register.	Management of project	Throughout operation phase	Local air quality will be virtually unaffected and will be based on PEQs

	Training will be provided to personnel for identification, segregation, and management of waste			

6.6 Roles and Responsibilities of Environment Management Team

The Proponent will utilize the following arrangements in the implementation of theEMMP during planning and design, construction, and operation phase. The Proponent is accountable for ensuring that resources are made available to effectively implement theEMMP and necessary environmental management measures arising from the project.

Position	Responsibility
Project Manager	• Supervising construction works. • Schedule preparation and resource forecasting for engineering and other technical activities relating to the project. • Effective implementation of the EMMP • Regular performance reviews • Corrective and/or remedial action where this may berequired.
Contractor	• Undertake development of facility in accordance withcontract signed with the Proponent. • Adhere to Proponent HSE policies, procedures and otherrequirements while undertaking the Project. • Implement aspects of EMMP assigned to them.
HSE Executive	• Preparation of environmental monitoring, reporting and anypermit applications (if any) • Overseeing of construction process and ensuring theimplementation of avoidance and mitigation measures • Conducting monitoring and review of EMMP implementationby contractor • Inspect the constructed facility after completion. • Develop policies and procedures on the environmental,

	social, health and safety issues. • Oversee implementation of the EMMP. • Review and analysis of monitoring results and preparationof brief reports to Project Manager • Planning of training programs for personnel in accordancewith relevant laws • Oversee inspection of the constructed facility after • completion of construction works

6.7 ENVIRONMENTAL MONITORING PLAN

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

Table 6-1: Environmental Monitoring Plan during Construction Phase

Env Quality	Parameters	Details of Location	Method	Stnd/Glines	Frequency	Responsibility
Air (emission of dust and exhaust)	Air Quality (PM_{10}) All relevant stack emissions (CO, NO_X, SO_X)	Construction Sites	• Visual control • technical inspection of machinery • Instrumental measuring	PEQS	Quarterly	Proponent
Water Quality	Groundwater Quality (Total Coliform, Fecal E.Coli, pH, TDS, Total hardness, Alkalinity Nitrates, Chloride, sodium, iron)	Construction Sites	• Laboratory Control	PEQS	Quarterly	Proponent
Wastewater Quality	Wastewater quality (pH, TDS, TSS, BOD_5, COD, Chloride, Iron, Nitrate)	Construction camps At Construction Sites	• WWM control • Laboratory control.	PEQS	Quarterly	Proponent
Noise Level	Noise level on dB (A) Scale	Construction Site	• Instrumental Monitoring	PEQS	Annually	Proponent

Table 6-2: Environmental Monitoring Plan during Operation Phase

Environmental Quality	Parameters	Details of Location	Method	Standards/ Guidelines	Frequency	Responsibility
Ambient Air	• SO2, NOx, CO, PM10,PM2.5,	• Minimum 2-3 point of Plant • Near Sensitive	• Instrumental monitoring, technical inspection of	PEQS	Quarterly	Proponent

		Receptor	machinery, visual control			
Noise Level	Noise level on dB (A)Scale	• Near Noisy Machinery • Near Sensitive Receptor	• Instrumental Monitoring	PEQS	Annually	Proponent
Solid Waste	Record of waste generated and waste disposal practice		• Visual/ site inspection	-	Quarterly	Proponent

6.8 REPORTING AND REVIWING PROCEDURES (Communication and Documentation)

An effective program for storing and communicating environment information during the project is an essential requirement of an EMP. This activity will be done by an independent monitoring consultant. The key features of such a mechanism are:

- Precise recording and maintenance of all information generated during the monitoring in a predetermined format.
- Communicating the information to a central location

- Storing the raw information in a central database
- Processing the information to produce periodic reports

Data recording and maintenance: All forms will be numbered and a tracking system will be developed for each. Whenever a form is released for use in the field, its number will be recorded. The monitors will be required to account for each form after completion. In this manner, it will be ensured that all forms are returned to the office, be they filled, unused or discarded.

Storage of information: A database for information collected during the project will be prepared. The database may include information on training programs, staff deployment, non-compliance, corrective actions, water resources, results of effects monitoring.

Meeting: For effective monitoring, management and documentation, of the environmental performance during the operation, environmental matters will be discussed during a daily meeting held on-site. Environmental concerns raised during the meetings will be mitigated after discussions with the proponent site representatives.

Reporting: Monitoring body will produce daily, weekly, monthly and another periodic report, as well as a final report of the project based on the information collected. The proponent site representative and the contractors will also prepare a weekly environmental report. Copies will be provided to the proponent and contractor's higher management

6.9 Schedule for Implementation & Environmental budget

Approximately PKR 1 Million budget will be reserved for tree plantation, solid waste management, trainings and environmental monitoring. Monitoring tests for ambient air quality, noise and groundwater quality will also be conducted.

Table 6-3: Schedule for Implementation & Environmental budget

Amenities	Frequency	Cost in PKR (Million)	
Ambient air monitoring	Construction: Biannualy Operation: quarterly	20,000/-	0.8 Million
Noise monitoring	Construction: Biannualy Operation: quarterly	10,000/-	
Water quality monitoring	Construction: Biannualy	20,000/-	

	Operation: quarterly		
Health & safety	Daily	500,000/-	
Tree Plantation/Green Belts Development	Monthly	200,000/-	
Solid Waste Management	Monthly	50,000/-	
Trainings	Monthly	0.2 Million	
Total Cost		**PKR 1 Million**	

6.10 Training Program

Training programs are a necessary agenda that has to be implemented to effectively implement Environmental Management & Monitoring Plan. The Environment, Health & Safety Officer will impart training to the contractor's staff. The key objective of the training program is to ensure that the requirement of EMP are clearly understood and followed throughout the project. The training shall cover following areas:

- EMP communication and documentation requirement.
- Community issues and their mitigation measures.
- Safe construction practices
- Use of personnel protective equipment's (PPEs)
- Environmentally sound construction practices
- Vehicular safety.
- Site restoration requirement.
- Solid Waste Disposal

Type of Training	Training Description	Period	Duration	Training By	Trainee
Occupational Health & Safetyfor workers	Health, safety and hygiene. Proper usage of Personal Protective Equipment (PPE's), Precautions to be taken for working safely	Before Construction Activities	Full Day	EHS Manager	Workers
Solid Waste Management	Waste segregation, identification of HazardousWaste, Use of PPEs and waste Handling	Before Commencementof Project Activities	Full Day	External Sources	Relevant workers and staff
Vehicular safety	Safe operation and maintenance of all vehicles, insurance in accordance with the applicable local and provincial/federal laws	Before Commencementof Project Activities	Full Day	EHS Manager	Relevant workersand staff
Health Safety and Environmental Auditing	Health Safety and Environmental Audits, Reporting Requirements	Before Commencementof Project Activities	Full Day	External Sources	Relevant Departm ent
Implementation of environmental management and monitoring plan	Explanation of Environment Management andMonitoring Program	Quarterly. As soon asthe project activities start	Full Day	External Sources	EHS Staff

7 STAKEHOLDERS CONSULTATION

7.1 GENERAL

Public consultation refers to the process by which the concerns of local affected persons and others who have plausible stake in the environmental impacts of the project or activity are ascertained with a view to taking into account all the material concerns in the project or activity design as appropriate. According to the IEE and EIA Review Regulations, public consultation is mandatory for any socio-environmental study.

Impact assessment survey and public consultation sessions held with different stakeholder groups that may be impacted by the said project development. The consultation process was carried out in accordance with the guidelines laid by EPA. The objectives of this process were to:

- Share information with stakeholders on said project installation and operation
- To access the impacts on the physical, biological, and socio-economic environment
- Understand stakeholder concerns regarding various aspects of the project
- Understand the perceptions, assessment of social impacts and concerns of the communities of the project area
- Find out the awareness level and situation of acceptability to identify any issues for the implementation of the said project
- To invite people to express their views about the positive/negative impacts on their life styles and environment

This report includes all the comments, which were taken into account in preparing the definitive development concept for the establishment of said project. Public consultation performa is attached as Annex-VIII of this EIA Report.

7.2 OBJECTIVES OF CONSULTATION

Public consultation plays a vital role in studying the impacts said project on stakeholders in its successful implementation and execution. It provides an opportunity to exchange knowledge with theall stakeholders. Referring particularly to a project related to environmental assessment, involvement of public is all the more essential, as it leads to better and more acceptable decision-making. The overall objective of the consultation with the stakeholders is to help verify the environmental and social issues, besides technical ones, that have been presumed to arise and to identify those which are not known or are specific to the project. In fact, discourse with many who have thoroughly observed the site conditions in the pre-developmental phase, goes a long way in updating the knowledge and understanding.

7.3 IDENTIFICATION OF STAKEHOLDERS

All the people who are directly or indirectly affected or concerned with the project are the stakeholder. Besides the living population of the surrounding areas, some other stakeholders were identified and contacted. They are the key players including; shops owners, vendors, public offices, school, university, hospitals,. Not only published material (Both brief and comprehensive literature were obtained on request) but also noted their views and the concerns. Following stakeholders are identified for this project:

Project stakeholders include the settled families, either property owners or the tenants, businessmen (land owners, traders, shopkeepers, vandors, transporters, restuarent owners etc.), employees of the commerical entities. PAPs are of two types, for instance:

7.3.1 Direct

In this case, the PAPs are those who will be benefited directly by project. No disturbance on the local community is being foreseen due to the installation of the said plant.

7.3.2 Indirect

Indirect impact will occur on those who are living or doing business within project area of influence. Indirect respondents include;

- ✓ Government agencies responsible to deal with the project related activities
- ✓ Government Agencies directly, indirectly or widely involved in the execution and monitoring of the said project
- ✓ Workers of political, cultural, religious or social scientific bodies, directly or indirectly related

7.4 PUBLIC DISCLOSURE

Public disclosure is the outcome of all such activities where public is involved at least in the information sharing process. This is an integral part of that process so before the proponent applies for NOC to the EPA, this disclosure will be distributed properly among all stakeholder. It is the responsibility of the proponent and the consultants to display public disclosure document at prominent places where community has easy access.

7.5 CONSULTATION PROCESS

Information disclosure, public consultation and discussion regarding the various aspects of the project with the people of the area are necessary. This process is intensified during the EIA Studies, and separate rounds of public consultations were held. Surveys were carried out in order to investigate physical, biological and socio-economic resources falling within the immediate area of influence of the project. Primary data collection included:

- Data collection regarding the socio-economic condition of the study area
- Pretesting of socio-economic survey tools in the field
- To consult the locals for collection of information on biological environment

Various meeting with the stakeholders were held the following objectives:

- Share information with stakeholders on the said project and expected impacts on community in the vicinity of the project
- Understand stakeholders' concerns regarding various aspects of the project, including the existing condition of the upgrading requirements, and the likely impact of construction and operation activities
- Provide an opportunity to the public to influence the project design in a positive manner
- Obtain local and traditional knowledge, before decision making
- Increase public confidence about the proponent, reviewers and decision makers
- Reduce conflict through the early identification of controversial issues, and work through them to find acceptable solutions
- Dissemination of information through discussions, education and liaison
- Documentation of information narrated by the stakeholders and mitigation measures proposed by the stakeholders
- Incorporation of public concerns and their address in the EIA; and eliciting their comments and feedback

7.5.1 Consultation Methodology

The methodology adopted for consultations is summarized below.

7.5.1.1 Consultation Material

The main document for distribution to stakeholders during the consultations was Social Impact Assessment Interview**.**

7.5.1.2 Consultation Mechanism

Primary stakeholders were consulted during informal and formal meetings held in the project area. The consultation process was carried out in the Urdu language. During these meetings a simple, non-technical, description of the project was given, with an overview of the project's likely human and environmental impact. This was followed by an open discussion allowing participants to voice their concerns and opinions. In addition to providing communities with information on the said project,

their feedback was documented during the primary stakeholder consultation. The issues and suggestions raised were recorded in field notes for analysis, and interpretation.

By reaching out to a wider segment of the population and using various communication tools such as participatory needs assessment, community consultation meetings, focus group discussions, in-depth interviews, and participatory rural appraisal EIA involved the community in active decision-making. This process will continue even after this EIA has been submitted, as well as during future EIA in which similar tools will be used to create consensus among stakeholders on specific environmental and social issues.

Secondary stakeholder consultations were more formal as they involved government representatives and local organizations, consulted during face-to-face meetings. They were briefed on the EIA process, the project design, and the potential negative and positive impact of the project on the area's environment and communities. It was important not to raise community expectations unnecessarily or unrealistically during the stakeholder consultation meetings in order to avoid undue conflict with community's leaders or local administrators. The issues recorded in the consultation process were examined, validated, and addressed in the EIA report.

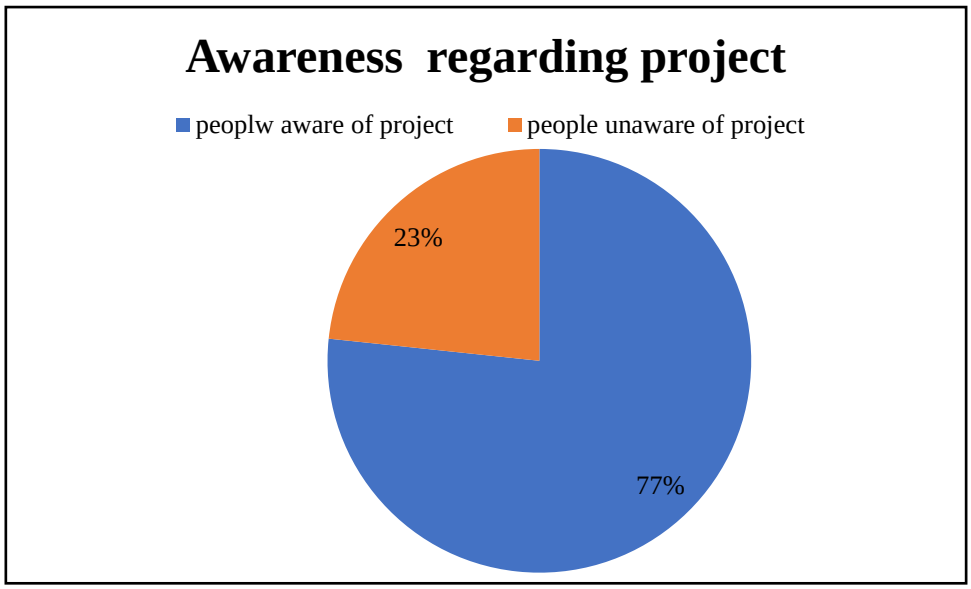
7.5.2 Primary Stakeholders Consultation

The community consultations were conducted with the community members outside their settlements to encourage and facilitate their participation. Consultation was done for 1 day.

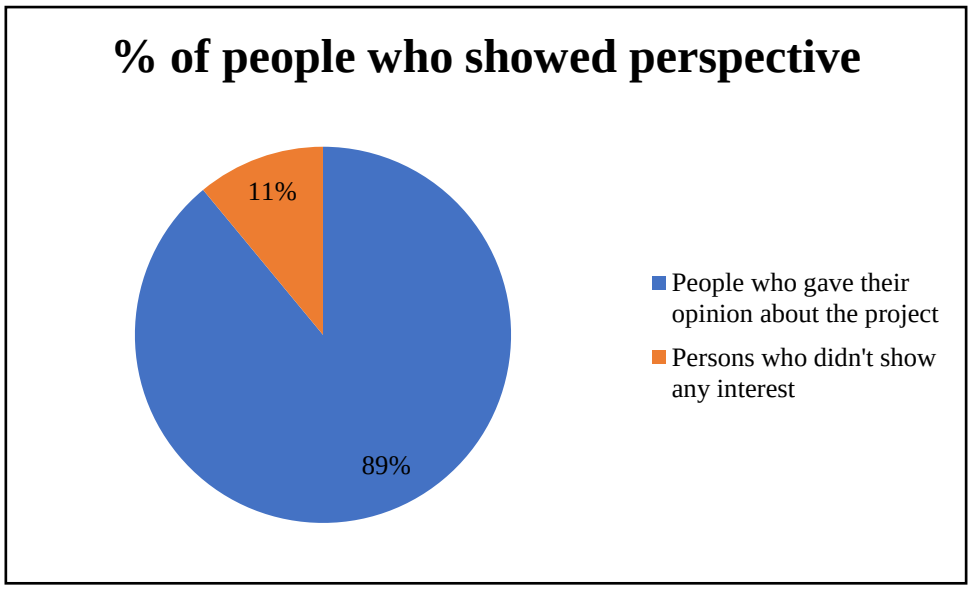
7.5.2.1 STAKEHOLDER CONCERNS AND RECOMMENDATIONS

The finding of the community consultation has been addressed in various sections of EIA. Mitigation plan has been incorporated into EMP. The summary of consultation with various stakeholders is given below

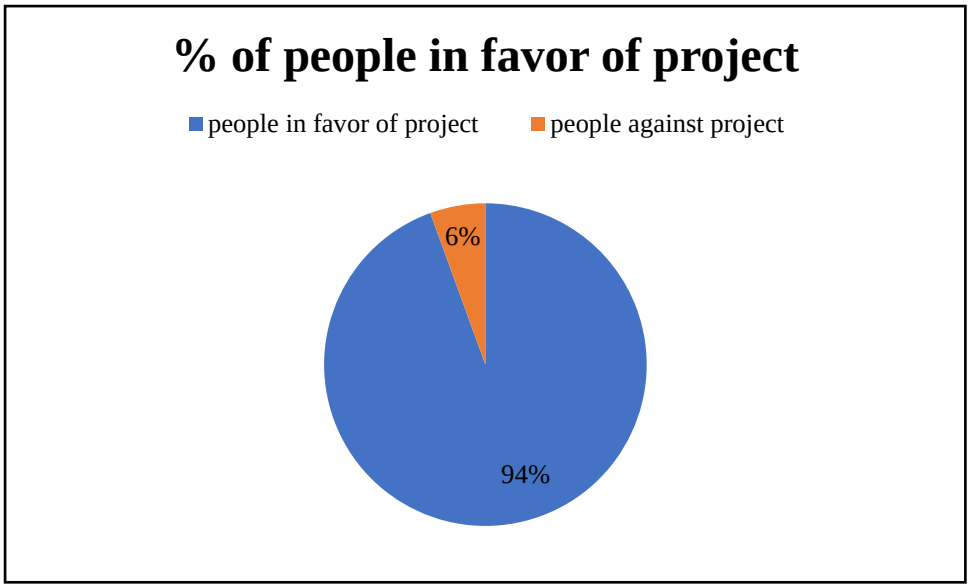
Out of total respondents of, 77% knew about the project whereas 23% were not aware of the project planning and implementation. All people were then briefed about the project.



89% commented their views about the project and 11% didn't respond.



Out of 89%, majority of the people (about 94%) favored the construction of the project keeping in view its importance and 6% people showed pessimistic views in general but mitigation measures and solutions to their concerns were provided.



Majority of people were in favor of project. They said that project will result not only in direct jobs opportunities for locals but also will enhance subsidiary business, trade, education, and community development. The people were of the view that industry might also elevate education standards, struggle for career enhancement besides improvement in standard and quality of living in area. People were also of the view that industry may also be instrumental in connecting the local people with major cities and will result in increase in GDP.

Very few near to 6 % only shows concerns over generator emissions, noise, wastewater and health impacts. Majority of the concerns were changed in the favor of installation after communicating the participants proper solutions and mitigation measures

7.6 STAKEHOLDERS CONSULTED

Names area and feedback of consulted stakeholders are given in table below:

Table 7-1: List of consulted stakeholders

Sr. No	Stakeholder name	CNIC	Feed Back Comments
1.	Muhammad Hakim	32301-0899669-5	Environmental Enhancement measures should be taken
2.	Abdulaziz	32302-8865076-7	Tree plantation should be ensured
3.	Asghar Ali	32301-6707794-1	Waste management should be done properly
4.	Kashif Ali	32301-1042443-9	Local people should be

			preferred for employment opportunities
5.	Parvez Hussain	31304-3641875-7	Tree Should be planted
6.	Muhammad Naeem	32301-7769904-3	Air pollution should be controlled
7.	Muhammad Zulfiqar	32302-1923668-3	jobs should be provided at priority
8.	Muhammad Waqar	32301-2286586-7	Dust emission should be controlled
9.	Muhammad Arif	32301-3560885-7	Wastewaters from should be treated
10.	Muhammad Javed	32301-2306631-7	Local native should be facilities
11.	Muhammad Jalal	32301-3712974-7	Plantation of trees should be ensured
12.	Muhammad Tofail	31301-1430910-3	Air Quality must be ensured
13.	Syed Barat Hussain	32301-0911865-5	Dust emission should be controlled
14.	Arif Khan	32302-9944089-5	Product should be of good quality for crops
15.	Basheer Hussain	32301-1072234-5	Product should be sold at lower price to locals
16.	Saddam Hussain	32302-6563777-9	Solid waste should be managed properly
17.	Muhammad Javed	32301-6984887-3	Project should have positive impacts
18.	Muhammad Aslam	32302-1531131-3	Project should have positive impacts on surrounding
19.	Hameed Ahmad	32301-5823956-3	Jobs must be provided to natives
20.	Muhammad Zafar	32302-8161811-7	Tree should be planted
21.	Muhammad Maqsood	32301-6784699-1	Dust Emission should be controlled
22.	Muhammad Aslam	32301-8661151-9	Generators emission should be controlled
23.	Muhammad Akram	32301-5319694-7	Waste should be managed properly
24.	Muhammad Aslam	32301-7149972-1	Job

25.	Muhammad Arshad	32301-0750673-3	Local people should be preferred for employment opportunities
26.	Muhammad Amir	32302-4496559-7	Project should have positive impacts on surrounding
27.	Muhammad Hashim	32301-0899299-1	Tree should be planted
28.	Muhammad Tariq	32302-4890073-5	Air pollution should be controlled
29.	Muhammad Parvez	32301-4365044-1	Local people should be preferred for employment opportunities
30.	Syed Irfan Mehdi	32301-2072338-5	Tree should be planted

7.7 ENVIRONMENT MANAGEMENT TEAM

The Proponent will utilize the following arrangements in the implementation of theEMMP during planning and design, construction, and operation phase. The Proponent is accountable for ensuring thatresources are made available to effectively implement the EMMP and necessary environmental management measures arising from the project

Position	Responsibility
Project Manager	• Supervising construction works. • Schedule preparation and resource forecasting for engineering and other technical activities relating to the project. • Effective implementation of the EMMP • Regular performance reviews • Corrective and/or remedial action where this may be required.
Contractor	• Undertake development of facility in accordance with contract signed with the Proponent. • Adhere to Proponent HSE policies, procedures and other requirements while undertaking the Project. • Implement aspects of EMMP assigned to them.

HSE Executive	• Preparation of environmental monitoring, reporting and any permitapplications (if any) • Overseeing of construction process and ensuring the implementation of avoidance and mitigation measures • Conducting monitoring and review of EMMP implementation bycontractor • Inspect the constructed facility after completion.

7.7.1 Secondary Stakeholders Consultation

The consultations were carried out with the local government officials and officials of the following departments:

1. District Office Environment, Kasure
2. Livestock Department

Comments and recommendations of all government representatives are presented in table below:

S#	Participant	Designation	Concerns/Remarks
Responsible Authority			
1	Mr. Sajid Ghafoor	Inspector Environment	• EHS plan should be enforced strictly • Proponent should install proper wastewater treatment plant • Should work for local people benefit • Preventive measures should be adopted to avoid any unfortunate incident • Environmental enhancement measures such as; Tree plantation, monitoring and safety should be ensured
Departments and Agencies			
Livestock Department			
1	Dr. Muhammad Sohail Khan	Assistant Director Livestock	• He said that as per market response the standard and quality of the medicines manufactured by company are satisfactory • Said plant will provide jobs to local communities • Project will lead to community development • Will raise living standard • He also expressed that local people should be first preference for jobs and CSR works.
Proponent Environment Management Team			

1	Proponent Environment Management Team	Proponent Environment Management Team	• Local employment will be ensured • Tree plantation will be done to make project environment friendly • Wastewater treatment plant has been installed • No waste will be dumped improperly
Environmental Practitioners and Experts			
1	Dr. Muhammad Faqir Irfan	PhD. Environment Lawyer	• To avoid violation of section 11 Wastewater Treatment Plant should be installed
Affected and Wider Community			
1	Mr. Khurram	NGO (Parho Barho Punjab)	• Local employment should be ensured • Proponent shall work for betterment of community

8 CONCLUSION AND RECOMMENDATIONS

8.1 CONCLUSION

The report presents Environmental Impact Assessment (EIA) of the said Medical Devices (Arsoplast, Arsotulle Dressing & Care Gauze Dressing) Manufacturing Unit

EIA of Said Project is performed according to guidelines of EPA. It includes description of the project, description of the environmental baselines, potential environmental impacts and suggested mitigation measures. An implementation mechanism for mitigation measures in the form of an Environmental Management Plan is included in the study.

Baseline physical, biological and socio-economic and cultural data and information was collected from a variety of primary and secondary sources, including field surveys, review of relevant literature and online publications. The collected data was used to organize profiles of the physical, biological and socio-economic environments, likely to be affected by the project. Communities were consulted as per public consultation processes including women, men and institutional stakeholders. The aim of public consultation was to assure the quality, comprehensiveness and effectiveness of the EIA; as well as to ensure that the views and opinions of the local people were adequately taken into account in the decision making process.

The performed EIA showed all anticipated impacts (both positive and negative), associated with the project. Appropriate mitigation measures as explained in the environmental study will strengthened the environment and promote sustainable development.

Based on overall assessment of the environmental impact of the project, it is concluded that the economic benefit from the project is not at the cost of environment. The project construction and operation activities can potentially impact the natural resources of the area. These adverse impacts can be largely reduced by implementing the appropriate mitigation measures which has been discussed in this report.

The potential impacts during construction phase includes soil erosion and degradation, soil and water contamination, ambient air quality deterioration caused by the exhaust emission and kicked up dust, noise pollution, damage to local infrastructure, safety hazards, very less loss to the wildlife and natural vegetation and public health concerns for the nearby communities.

The significant environmental management issues during operation phase include Safety hazard, Public Health and Nuisance, air and dust pollution, sewage disposal, solid waste and noise pollutions, vehicular traffic and water consumption.

On the basis of the overall impact assessment, more specifically, nature and magnitude of the residual environmental impacts identified during the present EIA, it is concluded that the proposed project is

unlikely to cause any significant, long-lasting impacts on the social, physical and biological environment of the area, provided that the proposed activities are carried out as mentioned in this report, and the mitigation measures and EMP included in this report are completely and effectively implemented.

It is accordingly recommended that Environmental Approval for the project may be issued by the Punjab Environmental Protection Agency

8.2 RECOMMENDATIONS

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

- Implementation of EMP must be given top priority.
- Proper PPEs including ear plugs, ear muffs, mufflers, goggles, gloves and shoes etc. should be provided to workers
- Train workers to use PPEs
- Advise workers to follow SOPs.
- Equipment maintenance and efficiency must be checked.
- No compromise on public health and environment should be allowed.
- Waste minimization practices should be employed and workers should be encouraged to adopt such methods.
- Wages should be distributed on time.
- Proper tree plantation plan should also be developed in order to make the project environment friendly.
- Small waste storage bins should be installed at different corner for proper waste collection and discharge.
- Proper dispensary and first aid box should be provided for workers
- Smoking should be avoided within premises of project site and near fuel storage areas.
- The Security Guards shall also be trained to act in case of all possible emergency situations. The fire alarms can be activated to signal evacuation. At the same time, communication shall be made with hospitals, emergency services and police for urgent support.
- The proposed Environmental Management & Monitoring Plan should be implemented.