2023

ENVIRONMENTAL IMPACT ASSESSMENT REPORT OF M/S WELBRO PHARMACEUTICALS

5-KM, MANGA RAIWIND ROAD LAHORE

Report Prepared By:

Pak Green Enviro-Engineering Pvt. Ltd

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Report Submitted By:

M/s WelBro Pharmaceuticals

Proponent:

Ikhlaq Ahmed Khan

Address:

5-Km, Manga Raiwind Road Lahore.

Contact:

0321-4341278

0344-9110325

EXECUTIVE SUMMARY

TITLE & LOCATION OF THE PROJECT

Subject project for which this Environmental Impact Assessment (EIA) Study has been conducted is the establishment of pharmaceutical unit under the name of M/s WelBro Pharmaceuticals at 5-Km Manga Raiwind Road, Lahore. The said project is proposed project for the construction of pharmaceutical unit.

PROJECT CAPACITY:

Daily Production Capacity of the Project:

The daily production capacity of the project is about 2 lac number of each product.

CATEGORY OF THE PROJECT:

The proposed pharmaceuticals units fall under category of Chemical Projects mentioned in Schedule-II, Category (B), Clause (2) of Punjab Environmental protection (Review of IEE/EIA) Regulations, 2022, hence such projects require submission of EIA Report to obtain Environmental Approval, under Section 12 of Punjab Environmental Protection Act 1997. TORs of the study under clause 5 (f) of policy and procedure for the filing, review and approval of environmental assessment are annexed as **Annexure-A** with this IEE report.

LOCATION

Subject unit is located at 5-Km Manga Raiwind Road, Lahore.

The Location Coordinates are:

- 31°16'08.64"N
- 74° 0'38.99"E

Project land coordinates are as follows:

Front = Industrial Unit

Back = Industrial Unit

Left = Shafi Complex-Manga Link Road

Right = Industrial Unit

Figure 1: Aerial view of the project site

NAME OF THE PROPONENT

Name: Ikhlaq Ahmed Khan

CNIC# 35202-753068-3

Mailing Address: House #557, Muhallah Block no. 3, sector-D 2, Green Town, Lahore.

For further details CNIC of the proponent and other relevant documents are attached with this report as **Annexure B**

NAME OF ORGANIZATION PREPARING THE REPORT:

Pak Green Enviro-Engineering (Pvt.) Ltd, as independent consultants, has been appointed by the proponent to conduct Environmental Impact Assessment Study.

Company office address: 46-M, Gulberg III, Lahore

Contact: 042-35441444, 0303-4442335.

For detail company profile see the Chapter # 1 "Introduction"

STUDY TEAM

Abdul Hafeez Nasir	Ph.D. Scholar Environmental Management
Iftikhar Ahmed	Environmental Specialist
Hassan Afzal	Environmental Specialist
Sabeera Tauheed	Environmentalist
Nageen Quyyum	Environmentalist

A BRIEF OUTLINE OF THE PROPOSAL

Name of the project:	Establishment of pharmaceutical industry under the name of M/s WelBro Pharmaceuticals
Location of the project:	05-Km Manga Raiwind Road, Lahore
Proposed Area:	Total area of the unit is 7 Kanals
Nature of Project:	Nature of the project is establishment of pharmaceutical industry for production of 1. Oral Liquid syrup 2. ORS Sachet 3. General Capsules 4. Food Supplements 5. Steroids 6. Tablets (Anti-Inflammatory, Analgesics, Multi vitamins)
Cost of the project:	Total cost of the project will be approx. 1 billion
Project process:	Project process can be divided into three phases i.e., phase I which includes formation of Tablets & formulation of capsules Phase II includes Liquid Syrup and dry suspension
Production capacity	The daily production capacity of the project is about 2 lac number of each product.
Proposed machines details	1. Stain less steel Mixing tank 1000L 2. Syrup filling machine (Local made) 10,000 Bottles per 8 hours.

	3. SS cone mixer 100 kg capacity (Local made) 4. SS Sachet filling machine (local made) 5. ZP 33 rotary machine (China) 6. DPP 150 Blister machine (China) 7. Semi-automatic capsule filling machine (China)
Power Requirement:	Power requirements of the project is being fulfilled by WAPDA with transformer of 360 K.W has been installed to full fill the energy requirement.
Labor/ Workforce:	During Operation: 20-25 persons (approximately)
Water Requirement:	During the operational phase of the project approx. 1728$m^{3/}$day water will be required for project process and domestic purposes.
Solid waste:	During operation: 360-400 kg/day domestic and project related waste[1]

THE MAJOR IMPACTS

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

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

Potential Impact	Criteria for determining Significance	Key Mitigation Measures
Solid waste Management— If solid waste will not be managed properly, it may cause negative impacts	Solid waste may produce in result of machinery installation e.g. wasted parts of machinery, wasted screws, nails and bolts. But most of the solid waste will of domestic type.	Machinery installation waste should be sold in scrap as it can be used by steel and iron industry. Domestic waste should be disposed of properly, handed over to contractors, placed in bins; Proper solid waste management plan should be devised and implemented.
Waste water - water used for washing purposes	PEQS parameters	Waste water should be treated in the Effluent treatment plant and then disposed off in the nearest drain.
Noise- Noise may be generated during fitting and installation activities (drilling etc) and from generators at the project site; which may be a nuisance for the workers as well as neighbors	OSHA standards	Activities generating high levels of noise should be minimized at the project site. If the noise level will exceed the permissible limits with reference to Punjab Environmental Quality Standards and OSHA standards, following recommendations are suggested to take action against the high noise levels: • Ear muffs and ear plugs are recommended in case of high noise levels. • Rubber wounds should be placed underneath the generator to avoid the vibration.
Socioeconomic impacts—Inter-cultural differences between the project staff from other areas and the local community may arise due to the subject project. Positive socioeconomic impacts due to increased infrastructure, employment	No community complaints are expected. Increased employment facilities Increased infrastructure	Training of the non-local project staff on local culture and norms; Avoidance of unnecessary interaction of local population with the non-local project staff. Employment opportunities should be provided to the local people.

opportunities and economic growth.		

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

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

groundwater resources of the project area	

PROPOSED ENVIRONMENTAL MONITORING

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

- **AMBIENT AIR**

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

- **NOISE**

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

- **WATER QUALITY**

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

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

CHAPTER # 1

INTRODUCTION

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

PURPOSE OF THE REPORT

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

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

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

IDENTIFICATION OF THE PROJECT AND PROPONENT

The proponent has been submitting this EIA report, the said project is proposed and proponent wants to establish the medicinal formulation unit under the name of M/s WelBro Pharmaceuticals and wants to get Environmental approval for said unit.

PROPONENT:

Name: Ikhlaq Ahmed Khan

CNIC# 35202-753068-3

Mailing Address: House #557, Muhallah Block no. 3, sector-D 2, Green Town, Lahore.

For further details CNIC of the proponent and other relevant documents are attached as **Annexure-B**

DETAILS OF CONSULTANT

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

Contact: Pak Green Enviro-Engineering (Pvt.) Ltd.
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Tel: 042-35441444, 03034442335
Email: info@pakgreen.pk; pak.green@hotmail.com

The current study was carried out by the following professionals:

Abdul Hafeez Nasir	Ph.D. Scholar Environmental Management
Iftikhar Ahmed	Environmental Specialist
Hassan Afzal	Environmental Specialist
Sabeera Tauheed	Environmentalist
Nageen Quyyum	Environmentalist

BRIEF DESCRIPTION OF NATURE, SIZE AND LOCATION OF PROJECT

Subject project is the proposed establishment of medicinal formulation unit under the name of M/s WelBro Pharmaceuticals at 5-Km Manga Raiwind Road, Lahore and other industrial units are already in process of establishment and operation in the surroundings. Total area for the subject project is 7 Kanals. Production capacity is 2 lac of each product per day and total cost of the project is approx. 01 billion.

LOCATION

Subject unit is located at 5-Km Manga Raiwind Road, Lahore.

The Location Coordinates are:

- 31°16'08.64"N
- 74° 0'38.99"E

Project land coordinates are as follows:

Front = Industrial Unit

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Left = Shafi Complex-Manga Link Road

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Figure 2: Aerial view of the project site

SCOPING

SPATIAL AND TEMPORAL BOUNDARIES OF ENVIRONMENTAL ASSESSMENT

The project falls in Industrial area of district Lahore. This project spans at the area of 7 Kanals, Various Industrial Units are already present around the vicinity of the project corridor. The main road along with the project site is Manga Road Link. The following map shows the spatial and temporal boundaries of the project. For further details Google earth map of the project on A3 page is attached as **Annexure-C** and layout **as Annexure E** with the report.

IMPORTANT ISSUES AND CONCERNS RAISED DURING CONSULTATION

Important issue and concerns raised by the community during consultation include the impact of waste water released from the treatment plant that may impact the nearby community. The Proponent ensured that treated effluent from the treatment plant will be within limits of the PEQS and then disposed of into the nearest drain. Hence will not cause any issues to the community The community was also concerned about employment for local people. The proponent made sure that maximum job opportunities for plant management and dyeing unit operation will be provided to the residents.

SIGNIFICANT IMPACTS TO BE DETERMINED

There can be impacts related to release of waste water containing chemicals into the nearby area. The proponent ensured the installation of treatment facility to treat the wastewater and then the safe disposal into nearby drain. Sludge produced if not disposed of properly can become a nuisance for nearby community especially due to its odor generation.

SCREENING

The project falls under category of Chemical Projects mentioned in Schedule-II, Category (B), Clause (2) of Punjab Environmental protection (Review of IEE/EIA) Regulations, 2022, hence such projects require submission of EIA Report to obtain Environmental Approval, under Section 12 of Punjab Environmental Protection Act 1997.

CHAPTER # 2

ANALYSIS OF ALTERNATIVES

This Chapter deals with the analytical overview of different alternatives that have been considered. The analysis has been carried out critically so as to justify the need of the Project and to select the most feasible alternative. Besides the economic viability; environmental sustainability and social soundness of the proposed Project has also been considered while analyzing different alternatives.

THE NO PROJECT ALTERNATIVE

Adopting zero-alternative would mean abandoning all the potential that the site offers to investor(s), contribution to government revenue and even local community livelihoods' improvement.

LOCATION/SITE ALTERNATIVES

To fulfill the commercial aspects of the project under reference of this EIA Report, it is to be sited at a place where commercial processing activity is either already going on or there are bright prospects of the same. Concurrently, it must also meet the legal requirements of the Punjab Environmental Protection Act, 1997 (Amended 2012). Availability of land at the best convenient place is equally important among other considerations for the site selection. Availability of access roads, communication facilities, electricity, basic infrastructure, sewerage etc. is yet the other necessary requirements.

Obviously, environmentally sound, neat and clean environment are the other considerations for site selection. The project will also facilitate the people of the area with increasing the opportunity of employment, and other related facilities.

Keeping these requirements and their feasibility and other basic infrastructural requirements, the selected site is ideally suited for Construction of the subject unit.

ALTERNATIVE SITE

No Alternative site has been considered due to insignificant environmental impacts. The proposed site fulfills the site selection criteria of Drug Regulatory of Pakistan, Ministry of health.

REASONS OF REJECTION

The reasons of rejection of this site are:

- High cost of land

- Nearby human settlements
- Due to the ownership conflict of surrounding land
- No proper communication facility
- Fauna & Floral Species are present at this site in abundance.

MODIFIED CONSTRUCTION TECHNOLOGY ALTERNATIVES

As the project site is said project is proposed, there are no construction technology alternatives rather some alteration/renovation of the building will be done.

TECHNOLOGY ALTERNATIVES

The company intends to import brand new machinery from renowned international manufacturers of the world. Machinery is based on latest available technology to produce high quality medicines. The machines will also be having pollution remove technologies built in. Therefore, it the best option to use that technology.

CHAPTER # 3

DESCRIPTION OF THE PROJECT

TYPE AND CATEGORY OF THE PROJECT:

Subject project is the establishment of pharmaceutical unit under the name of M/s WelBro Pharmaceuticals at 5-Km Manga Raiwind Road, Lahore.

The project falls under category of Chemical Projects mentioned in Schedule-II, Category (B), Clause (2) of Punjab Environmental protection (Review of IEE/EIA) Regulations, 2022, hence such projects require submission of EIA Report to obtain Environmental Approval, under Section 12 of Punjab Environmental Protection Act 1997.

OBJECTIVES OF THE PROJECT

Objectives of the construction of the subject project are:

- To establish the business for the proponent.
- To contribute to the national economy of the country.
- Compensate to help poverty by providing employment.

LOCATION AND SITE LAYOUT OF THE PROJECT:

Subject unit is located at 5-Km Manga Raiwind Road, Lahore.

The Location Coordinates are:

- 31°16'08.64"N
- 74° 0'38.99"E

Project land coordinates are as follows:

Front = Industrial Unit

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For further details, layout map of the project is attached as **Annexure E**.

LAND USE ON SITE

Subject project is establishment of medicinal formulation unit area of the unit is industrial because unit is present at Multan Road.

ROAD ACCESS

Manga Link Road is present on the left side of the project, because subject project is present in Manga Raiwind Lahore.

VEGETATION FEATURES OF THE PROJECT

The project does not have any significant vegetation features because surrounding of the area is clear.

COST AND MAGNITUDE OF THE OPERATION

Project is establishment of medicinal formulation unit under the name of M/s WelBro Pharmaceuticals. Total area of the project is 7 Kanals and the cost of the project is approx. 1 billion. There are no other associated activities with regard to the subject project.

SCHEDULE OF IMPLEMENTATION

Detailed feasibility studies and designing of the project have been completed. Necessary legal, administrative and financial formalities are being finalized. The project is expected to be

completed within 16-17 months from the date of environmental approval. Subsequently the operational and maintenance aspects of the project will be undertaken by the proponent.

DESCRIPTION OF THE PROJECT:

The project aims to establish pharmaceutical unit under the name of WelBro Pharmaceuticals at 5-Km Manga Raiwind Road, Lahore. The project activities involve tablets, syrup, and dry suspension over an area of 7 Kanals.

DETAILED PROCESS

The proposed project is a small-scale pharmaceutical manufacturing unit which is going to be established at 5-km Manga Raiwind Road, Lahore. The proposed site for the WelBro Pharmaceuticals had been already under the possession of the owner.

The proposed project is a small-scale pharmaceutical manufacturing unit which is going to be established at 5-Km Manga Raiwind Road, Lahore. The proposed site for the WelBro Pharmaceuticals had been already under the possession of the owner.

The proposed pharmaceutical unit will have production capacity of 2 Lacs number of each product including bottles oral liquid syrup, packets of sachets. capsules and tablets (Anti-inflammatory, Analgesic and multi vitamins, Steroids and general capsules). Water requirement for this proposed project is small. The water will be used for production of syrup and washing purpose. About 500 Liter water will be required in manufacturing process. Small quantity of waste water will be generated from process activities. About 20 man power will be required during construction phase and for operation phase 20 person will be required for operation of this proposed pharmaceutical unit. The proposed project will have modem air cleaning system (Heating Ventilation and Air The detail of process, raw materials are mentioned below:

Conditioning System) for control of dust and vapors during operation phase. Further before emitting air into environment, it will be passed through two stage aluminum filter and HEPA filter with collection efficiency of 99.9% for fine dust and vapors removal.

Equipment and Machinery to be Installed

1. Stain less steel Mixing tank 1000L
2. Syrup filling machine (Local made) 10,000 Bottles per 8 hours.
3. SS cone mixer 100 kg capacity (Local made)

4. SS Sachet filling machine (local made)
5. ZP 33 rotary machine (China)
6. DPP 150 Blister machine (China)
7. Semi-automatic capsule filling machine (China)

Components of proposed project:

- Steroids
- Oral Liquid Syrup
- ORS Sachets
- Capsules
- Tablets

RAW MATERIAL:

Sr. No.	**Raw Material**
1	Active Pharmaceutical Ingredients (API) 1. Oral liquid syrup. o IVY leaf extract. o Thymol(fennel) extract. o Ephedra vulgaris extract. o Iron Bisglycinate extract. o Vitamin C. D3. E. BI. B2. B6. 812. 2. Capsule (food supplement) o Coral calcium o Vitamin C. D3. E. Bl. B2. 86. B12 o Iron Bisglycinatc extract 3. ORS Sachets o Vitamin C. calcium powder. dextrose AH, Citric acid AH. o orange flavor. sweetener (polysucralose) 4. Tablets (Anti-inflammatory. Analgesic and multi vitamins) o Ascin. o Iron Bisglycinate extract. o Vitamin C. D3. E. BI, B2. 136. 1312. o Oral calcium

	5. Steroids o Ergosterol o Steroid hormones o Cholesterol

PRODUCT DETAIL:

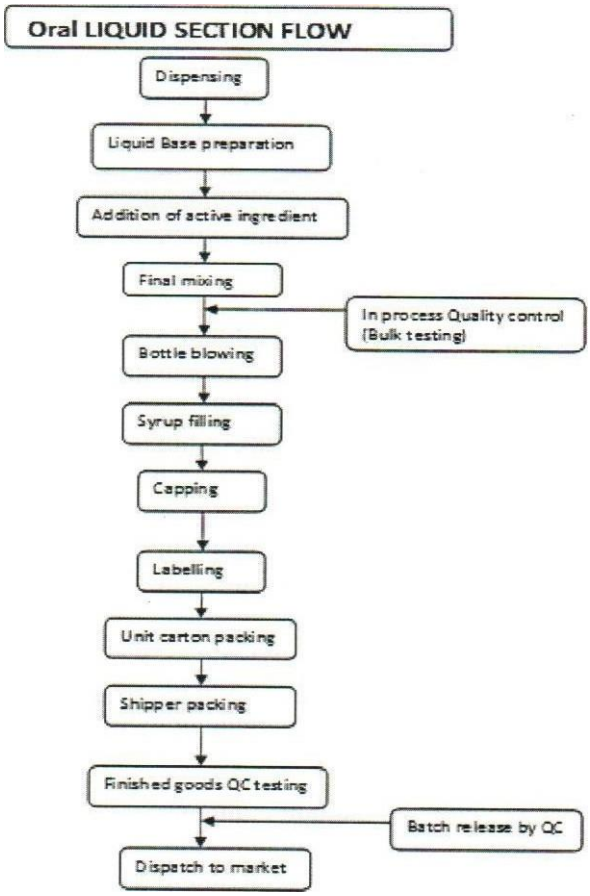
Product detail of WelBro Pharmaceutical is as follows**.**

FINAL PRODUCTS
1. Oral Liquid syrup
2. ORS Sachet
3. Capsules
4. Food Supplements
5. Steroids
6. Tablets (Anti-Inflammatory, Analgesics, Multi vitamins)

Oral Liquid Syrup:

Oral liquid are homogeneous liquid preparations usually contain a solution an emulsion or a suspension of one or more active ingredients in a suitable liquid base. They may also contain suitable sweeting agents, flavoring agents and anti-microbial substances for preservation. During manufacturing, packing storage and distribution process of oral liquid microbial quality will be maintained and microbial count will be within acceptance criteria. There are different types of oral liquid.

- Syrup
- Oral suspension
- Oral solution
- Oral drop
- Oral Emulsion
- Mixture
- Linctus

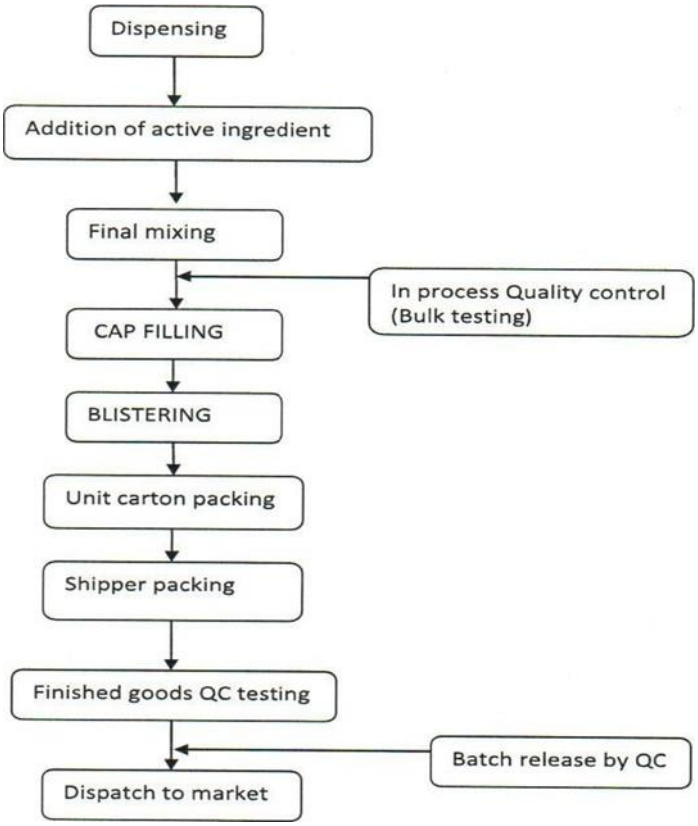


Process flow chart of oral liquid syrup

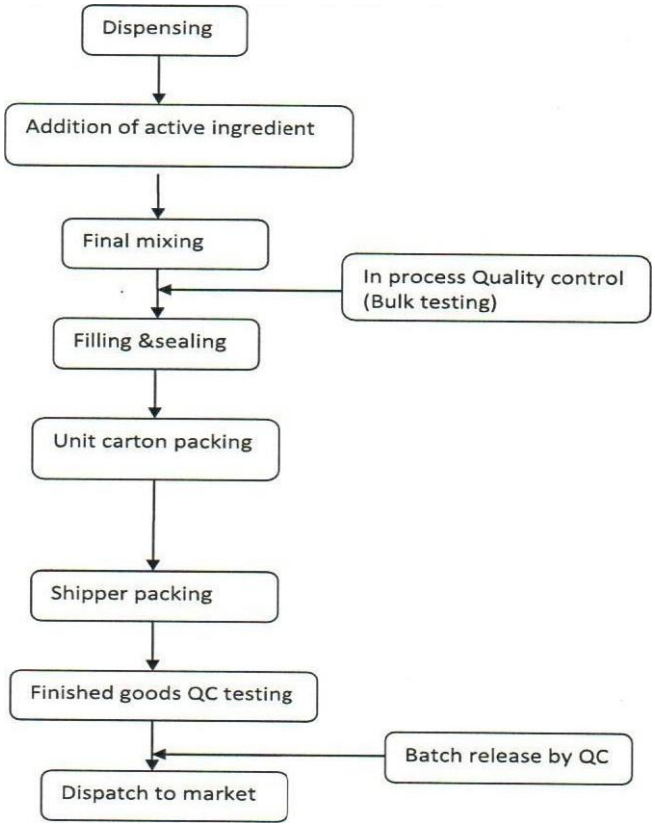
Tablet, Capsule and Sachet:

The production capacity of tablets, Capsule and sachet of proposed pharmaceutical. Unit will be 2 lacs of packets daily. Tablet manufacturing consists of following process:

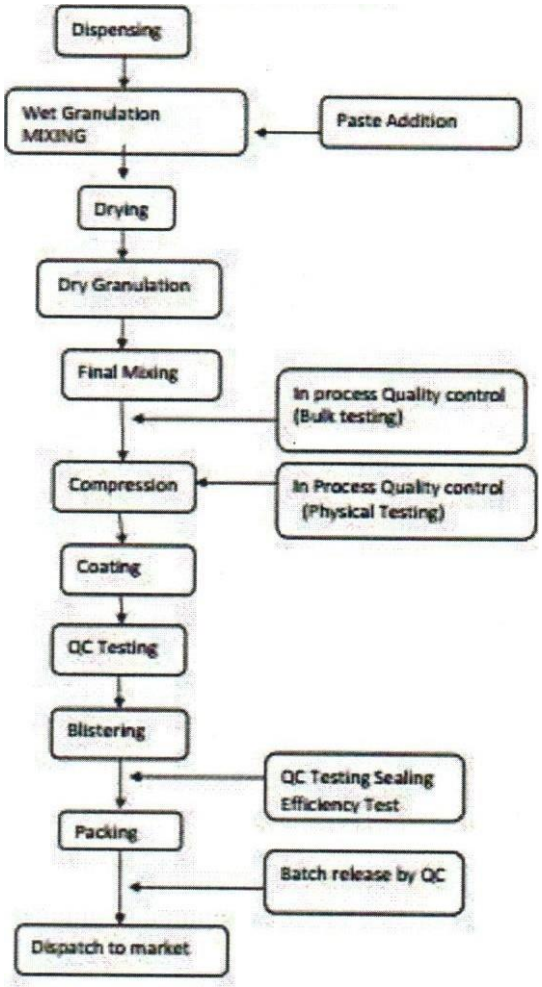
- Mixing
- Grinding
- Compression
- Coating
- Blistering
- Packing



Process Flow of Tablets section



Process Flow of Sachet and its packaging



Process Flow of Tablet Section

WATER REQUIREMENTS:

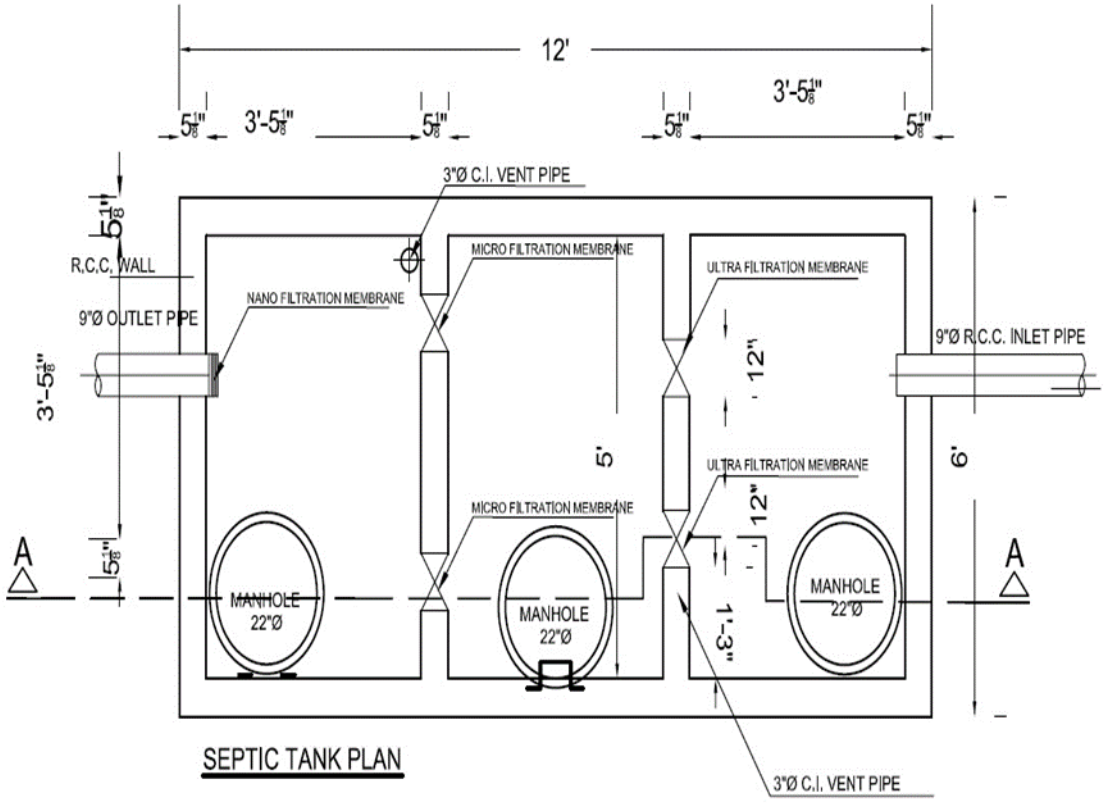
During construction phase of the project 80 gallons per person per day water required. During the operational phase of the project approx. 500 liters/day water will be required for project process and domestic purposes.

WASTE WATER TREATMENT:

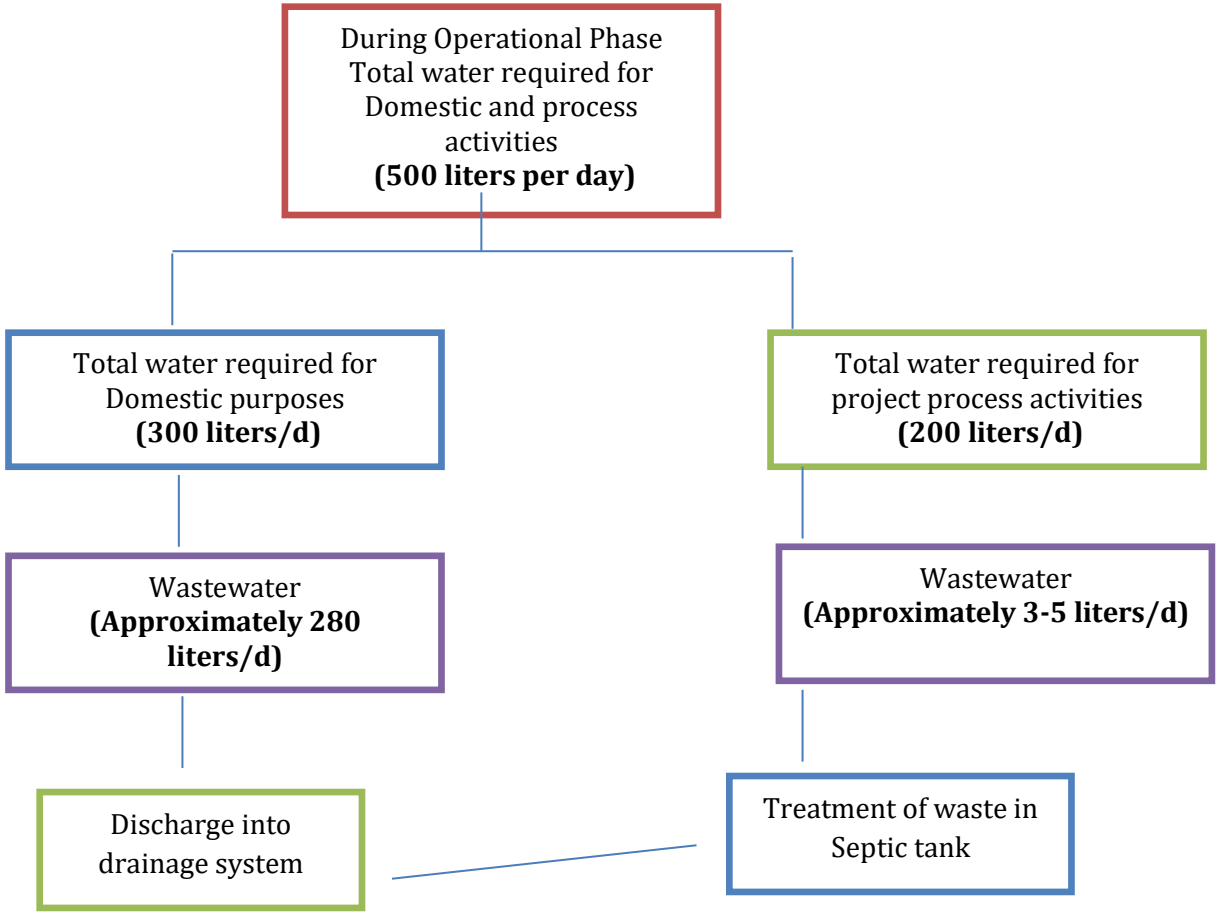
60-70% of the used water will be the waste water which will be treated in septic tank. And no wastewater will be disposed of into local drain without having treatment.

WASTEWATER DRAIN:

Local drainage system is present near the project site, in which wastewater will be disposed of after treatment in the septic tank.



Estimated Water Balance



Estimated water balance

SOLID WASTE:

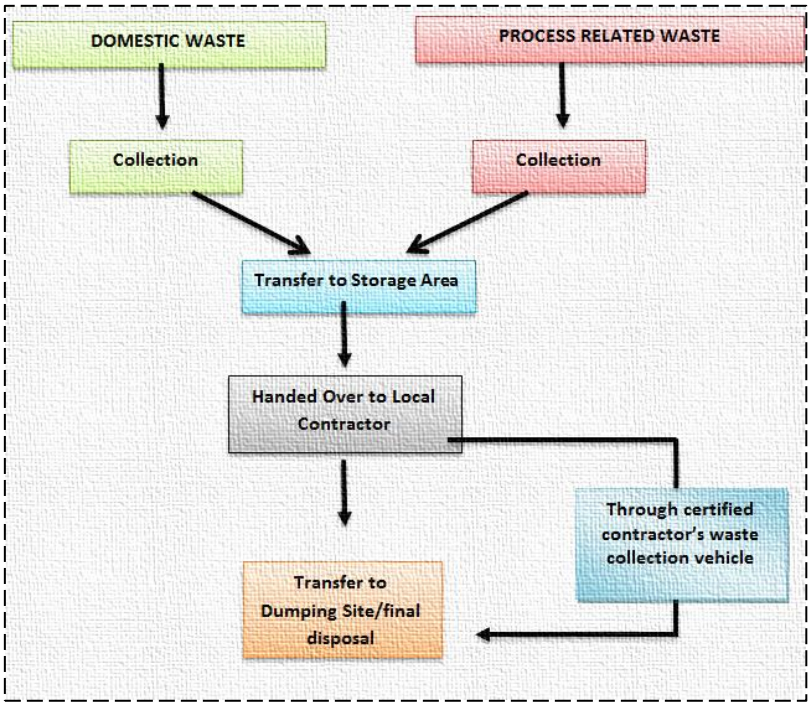
According to an estimate, approx. 560 kg/day domestic and project related solid waste will be produced during the operation phase of the project (based on solid waste generation rates of 0.45 kg/capita/day urban waste generation). Project related waste will be handed over to local contractor

SOLID WASTE MANAGEMENT SYSTEM/PRACTICES

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

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

FLOW CHART OF SOLID WASTE MANAGEMENT PLAN:



Solid Waste Management Plan

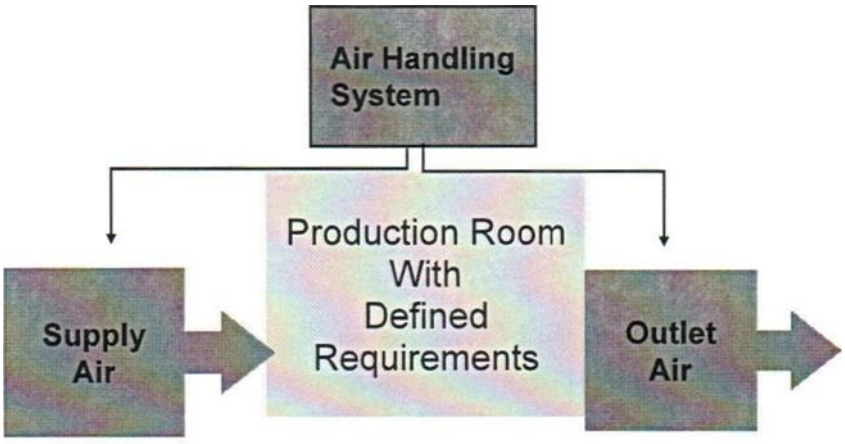
VENTILATION SYSTEM FOR MAINTENANCE OF INDOOR AIR QUALITY:

Roof overhangs, window size and placement, and overall building shape is designed in a way to ensure good ventilation. The placement of porches, garages, trees will also be ensured throughout the project activities.

TREATMENT SYSTEM FOR INDOOR AIR QUALITY:

The manufacturing process environment is critical for product quality in pharmaceutical units. It depends on following factors.

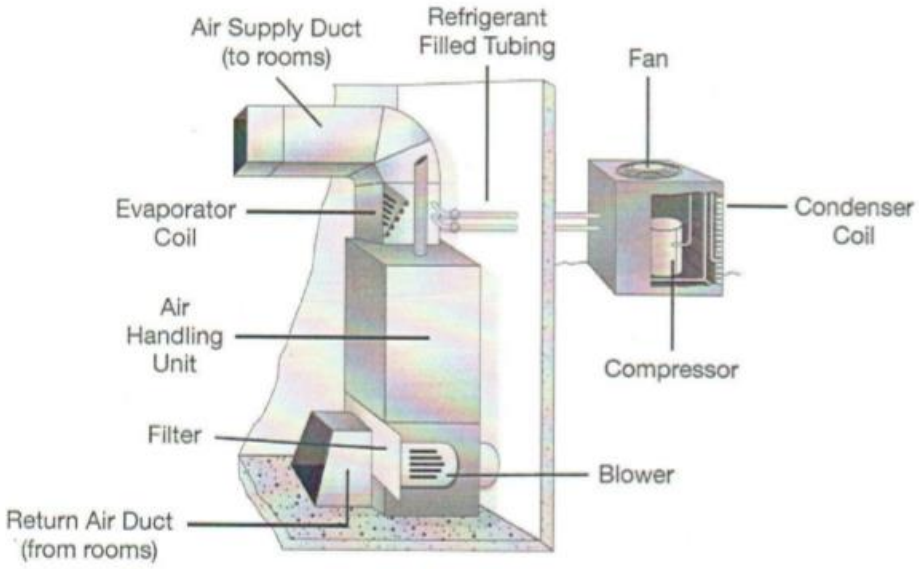
- Light
- Temperature
- Humidity
- Air movement
- Microbial contamination
- Particulate contamination
- Uncontrolled environment can lead to product degradation



HEATING VENTILATION AND AIR CONDITIONING SYSTEM (HVAC):

This system is used to provide heating and cooling services to buildings. HVAC is an important part of residential structures such as single-family homes, apartment buildings, hotels and senior living facilities, medium to large industrial and office buildings such as skyscrapers and hospitals, on board vessels, and in marine environments, where safe and healthy building conditions are regulated with respect to temperature and humidity, using fresh air from outdoors. Ventilation is the process of exchanging or replacing air in any space to provide high indoor air quality which involves temperature control, oxygen replenishment, and removal of moisture, odors, smoke, heat, dust, airborne bacteria, carbon dioxide, and other gases.

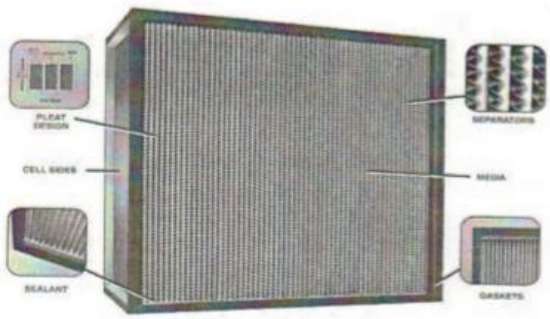
Ventilation removes unpleasant smells and excessive moisture, introduces outside air, keeps interior building air circulating, and prevents stagnation of the interior air. The proposed pharmaceutical unit will have HVAC system in Production area.it will maintain the temperature and air quality of process area during winter and summer season.



P.P: View of HVAC system diagram

HEPA Filter:

High-efficiency particulate matter arresting or high-efficiency particulate air, is a type of filter. It can remove vide range of remove a broad range of airborne contaminants, including fine dust, smoke and vapors. Aluminum filter along with HEPA filter will be installed before air duct with removal efficiency 99.99%.it will capture fine dust, air born contaminants and vapors.



P.P: View of HEPA Filter

MITIGATION MEASURES TO CONTROL THE EMISSIONS OF GENERATORS:

i) Firstly, usage of the generator made up of latest and environment friendly technology is being ensured at the unit.

ii) Standard fuel is being used in the generator.

iii) Proper and regular tuning of the generator will be done.

iv) Double glazed glass and thick walls canopy of the generators has been installed which will limit the emissions of the noise.

All these measures will ensure the PEQS compliance of generators and emissions will not exceed the limits.

PARKING AREA

Parking area has been made available within the unit for cars, motorcycles, trucks etc.

PERSONAL PROTECTIVE EQUIPMENT:

Following PPEs will be provided to the workers in the unit:

- Dust Mask
- Ear Plugs
- Safety Boots
- Safety Gloves
- Safety Belt
- Helmet
- Goggles

TYPES OF PPES USED DURING OPERATIONAL ACTIVITIES

Protection	Occupational Hazards	PPEs
Head Protection	Falling objects, inadequate height clearance, and overhead power cords	Helmets with or without electrical protection
Hand protection	Hazardous material, cuts or lacerations, vibrations, extreme temperatures	Synthetic or Rubber gloves, leather, insulating material etc.

Eye and face protection	Flying particles, molten metal, liquid chemicals, gases or vapors, light radiation	Glasses, shield protective, etc.
Hearing protection	Noise, ultra sound	Hearing protectors like ear plugs, ear muffs
Respiratory protection	Dust, fogs, fumes, gases, smokes, vapors, oxygen deficiency	Facemasks or air supply
Body protection	Extreme temperatures, hazardous materials, biological agents, cutting and laceration	Aprons, insulating clothing etc. of appropriate materials

The unit will be secured with the presence of security guards round the clock which improves the security of the project site and also in its vicinity.

INDUSTRIES:

Project is present in Industrial area and many industries are present around the unit.

POWER SOURCES AND TRANSMISSION:

Estimated power requirements of the unit are provided by WAPDA.

Transformer of 360 KW have been installed.

AVAILABLE FACILITIES

Available facilities at unit are:

- Electric supply from WAPDA
- Solid Management (SWM)
- Line and cellular telephone facilities
- Water supply, sewerage disposal and drainage systems

RESTORATION / REHABILITATION PLAN

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

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

GOVERNMENT APPROVALS REQUIRED BY THE PROJECT:

Project is said project and subject project is a proposed construction of unit for medicinal production unit. Project proponent has committed to obtain all the concern certificates/ approvals from concerned department prior to the operational activity of the project.

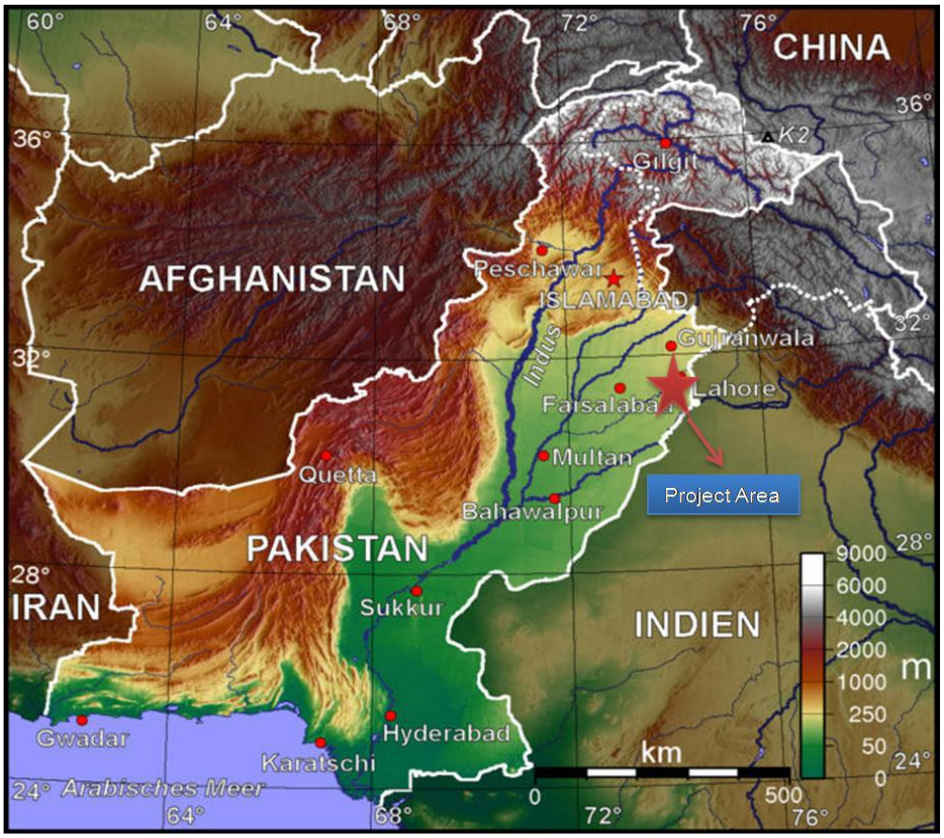
CHAPTER # 4
DESCRIPTION OF ENVIRONMENT

This section describes the baseline conditions, which cover the existing physical, ecological and socio-economic environment of the project as well as a study area. Data were collected by reviewing secondary data and field surveys.

PHYSICAL ENVIRONMENT/ RESOURCES

TOPOGRAPHY:

The topography of the project area is flat. The General height of the area is approximately 220 meters above the Mean Sea Level (MSL). The district of Lahore is divided into two parts. The low-lying alluvial soil is along the Ravi River and the upland in the east. Upland is a plain slope from northeast to southwest. The lowlands are generally inundated during the monsoon season by the Ravi River, flowing in the west of the district along its boundary with district Sheikhupura. The below figure is showing the topography of the area.



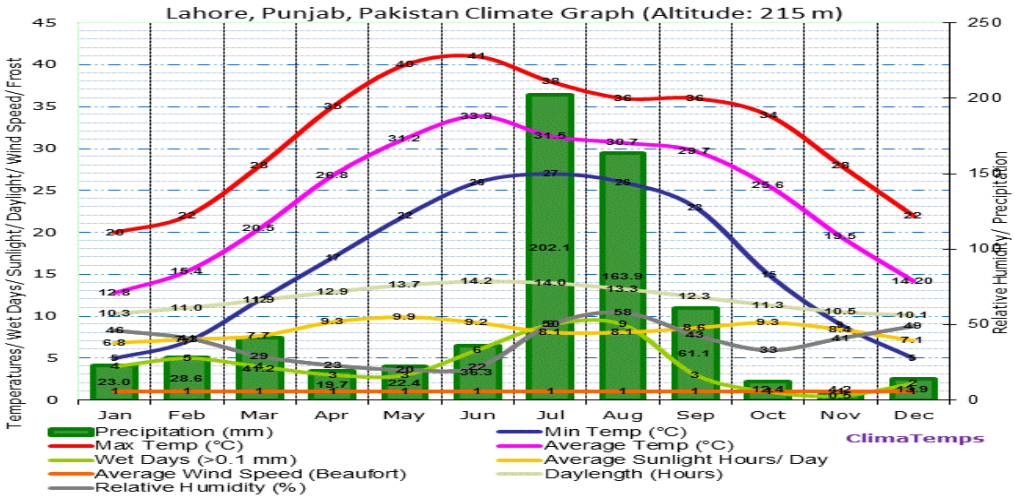
SOIL:

The soil in the Project Area is cohesion less and is of alluvial type. Various soil layers below the ground level includes: silt, silty clay, silty sand, poorly graded sand with silt, lean clay etc. The soil is different in character and generally inclined to be dry. However, it is rich in potential plant nutrients.

CLIMATE AND METROLOGY:

Seasonal climatic conditions must be considered for the design and execution of Project. The climate including air, temperature, precipitation, humidity and evaporation is an influencing factor, affecting the construction of project and other engineering structures. However, to determine the overall effect of the climatic stresses, daily and seasonal temperature changes, site altitude, direct solar radiation, and precipitation must be considered. The Project Area has extreme climate: it has hot summer and cold winters. The summer starts from April and lasts till September. May, June, and July are the hottest months. The mean maximum and minimum temperature ranges from 40.4 ºC and 27.3 ºC respectively for these months. The winter seasons lasts from November to March. December, January and February are the coldest months. The mean maximum and mean minimum temperature ranges from 19.8ºC to 5.9ºC in January. Temperatures in the Project Area vary from 5.9 ºC to 40.4 ºC.

The project area receives rains in all the seasons but monsoon rain is pronounced and constitutes a definite rainy season between the month of July and September. The average rainfall is about 629 millimeters per year. Below figures showing the temperature, precipitation, and relative humidity trends in the study area.

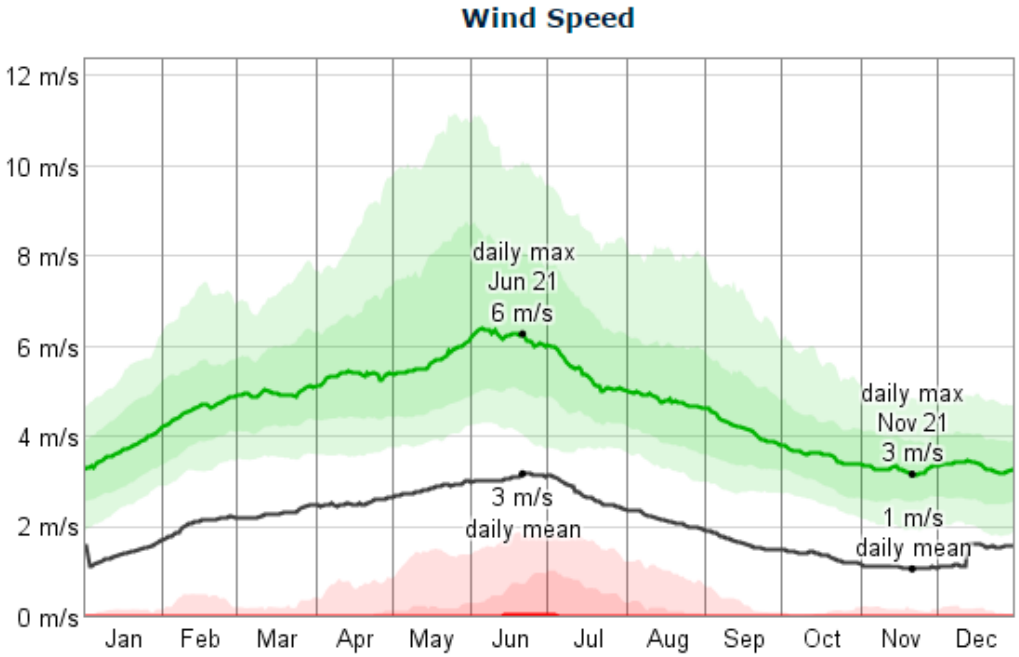


WIND:

Over the course of the year, typical wind speeds vary from 0 m/s to 6 m/s (calm to moderate breeze), rarely exceeding 11 m/s (strong breeze).

The highest average wind speed of 3 m/s (light breeze) occurs around June 21, at which time the average daily maximum wind speed is 6 m/s (moderate breeze).

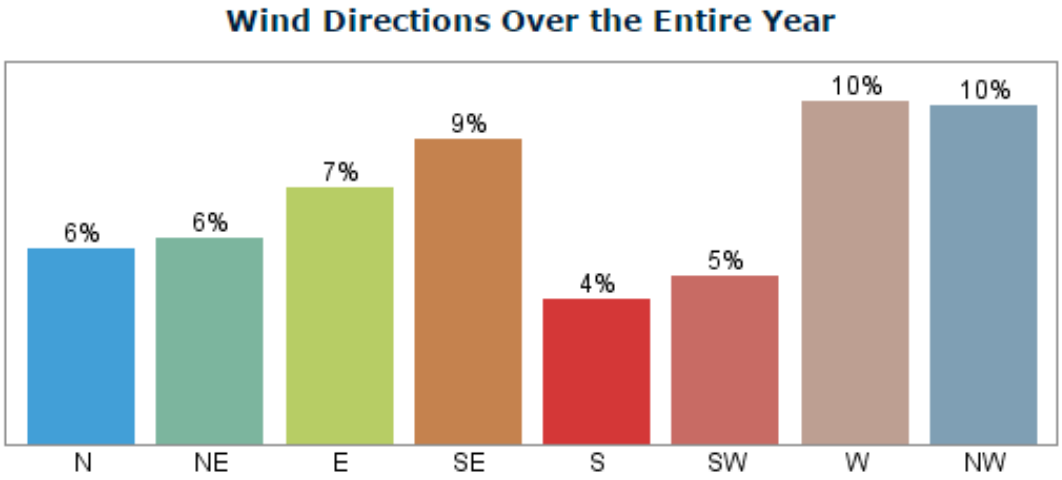
The lowest average wind speed of 1 m/s (light air) occurs around November 21, at which time the average daily maximum wind speed is 3 m/s (light breeze).



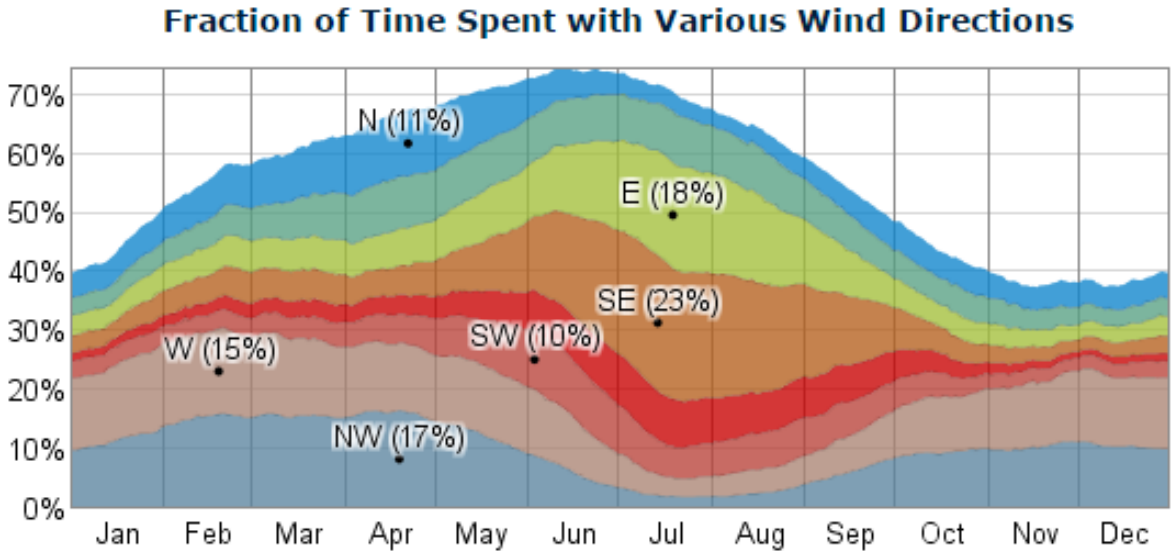
The average daily minimum (red), maximum (green), and average (black) wind speed with percentile bands (inner band from 25th to 75th percentile, outer band from 10th to 90th percentile).

Reference: https://weatherspark.com/averages/32865/Lahore-Punjab-Pakistan

The wind direction is highly variable and is not predominantly from any single direction. The wind is least often out of the south (4% of the time) and south west (5% of the time).



The fraction of time spent with the wind blowing from the various directions over the entire year. Values do not sum to 100% because the wind direction is undefined when the wind speed is zero.



The fraction of time spent with the wind blowing from the various directions on a daily basis. Stacked values do not always sum to 100% because the wind direction is undefined when the wind speed is zero.

Reference: https://weatherspark.com/averages/32865/Lahore-Punjab-Pakistan

AMBIENT AIR QUALITY:

Atmospheric pollution, particularly in urban areas like Lahore, has a strong impact on daily life. Project site is located at Manga Raiwind Road, Lahore. Motor vehicles are a major source of air pollution in the project area. Monitoring was conducted at the project site by using Fine Dust Sampler IPM-FDS 2.5/10µ and Ambient Air Analyzer.

To record the baseline ambient air quality of the project area, monitoring was conducted at advised locations to assess the concentration of priority pollutants (Carbon monoxide, Nitrogen dioxide, Sulphur dioxide, and PM_{10}) in the air. Lab reports of Ambient Air Monitoring are attached as **Annexure-D** with the IEE report.

NOISE LEVEL MONITORING:

BASIC ENVIRONMENTAL CONDITIONS:

During the measurement following conditions were prevailed on the workplace:

METROLOGICAL CONDITIONS:

During the noise level monitoring weather was dry and the sky was clear. Air was blowing at normal speed

MONITORING INSTRUMENT:

The description of the instrument used for the noise level monitoring is given below:

Name: Digital sound level meter

Model: AR824

Company: Intel Instruments plus

METHODOLOGY ADOPTED:

The noise level was monitored at four points; lab results are attached as **Annexure-D.**

GROUNDWATER:

The underground water will be used as a source of water at the project site. The sample was taken from the tube well near the project area to test its parameters. Lab results are attached as **Annexure-D.**

ECOLOGICAL RESOURCES

As the climate of Lahore is semi-arid and subtropical, the vegetation of the district falls under scrub, dry, tropical thorn forest type as per phytogeographical classification of the area but this vegetation is confined to the graveyards in the Lahore city and the project site is free from such type of vegetation.

FLORA:

There are small grasses and shrubs present at the project site. Some native trees were observed in the surrounding areas. Native trees and plants 6 feet in height will be planted within the premises of the project by the project proponent with the consultation of the concerned authority

FAUNA:

Different birds were observed at the project site during the site visit including sparrow, crow, pigeon, and dove, etc. Other than that, no fauna was observed at the site during the site visit.

SOCIOECONOMIC ENVIRONMENT:

The socioeconomic environment of district Lahore has been studied through secondary sources and a brief introduction has been given below:

DEMOGRAPHIC CHARACTERISTICS OF THE PROJECT AREA

The total population of the Lahore District has crossed 10 million.

RELIGION

The population of the district is predominantly Muslim i.e., approx. 95 percent, other minorities like Christians, Sikhs, and Hindus etc. are approx. 5 percent.

EDUCATION

Lahore is known as Pakistan's education capital, with more colleges and universities than any other city in the country. Lahore is Pakistan’s largest producer of professionals in the fields of science, technology, IT, engineering, medicine, nuclear sciences, pharmacology, telecommunication, biotechnology and microelectronics. Most of the reputable universities are public, but in recent years there has also been an upsurge in the number of private universities. The current literacy rate of Lahore is 74%. Lahore hosts some of Pakistan's oldest educational institutes: Government College Lahore (now Government College University), established in 1864; Forman Christian College, a chartered university established in 1864; University of the Punjab, established in 1882; Kinnaird College, established in 1913; and University of Engineering and Technology, Lahore (UET Lahore), established in 1921. UET is also Pakistan's oldest technical degree-awarding institute and its first university in the field of engineering and technology.

Lahore's institutes in the fields of computer science, IT, and engineering include the National University of Computer and Emerging Sciences (NUCES or FAST-NU) and Punjab University College of Information Technology. Notable architecture schools include Beaconhouse National University, COMSATS Institute of Information Technology, University of South Asia, National College of Arts, and University of Engineering and Technology, Lahore. Notable business schools include the Lahore University of Management Sciences (LUMS), Lahore School of Economics, Forman Christian College, and, the University of Management and Technology. University of Education, established in 2002, is Pakistan's first specialized university in the field of education.

Lahore also provides education in many fields of health sciences. Notable medical colleges offering MBBS degrees include Allama Iqbal Medical College, Fatima Jinnah Medical College, King Edward Medical University, Lahore Medical and Dental College, Services Institute of Medical Sciences, Shaikh Khalifa Bin Zayed Al-Nahyan Medical and Dental College and Shalimar Medical and Dental College. Important postgraduate institutes are Punjab Institute of Cardiology and University of Health Sciences, Lahore. University of Veterinary and Animal Sciences is the only college in Lahore providing education in the field of veterinary medicine. De 'Montmorency College of Dentistry is an important college of dentistry. There are many institutes offering education in fields of nursing and pharmacy as well.

Notable schools include Aitchison College, St. Anthony's College, Lahore College of Arts and Sciences, Lahore Grammar School and Salamat School System. Aghaz School System is present near the subject project.

HEALTH FACILITIES

Ample medical and health facilities are available in the Lahore Metropolitan Corporation area and its suburbs. Shaukat Khanam Hospital is the latest addition in the medical care facilities in Lahore for the most dangerous disease in the country. i.e., Cancer. There are also other hospitals of voluntary organizations which provide health cover to the general public. King Zaid Bin Sultan Hospital is also a very advanced addition in the medical care for Lahore. Among the prominent hospitals are General Hospital, Lady Willington Hospital, Mayo Hospital, Fatima Jinnah Hospital, The Children Hospital, Services Hospital, and Ganga Ram Hospital etc. Besides, a number of private medical practitioners, Hakims and homeopathic doctors are also practicing in the city. Some famous Health facilities located in the Project vicinity are Hameed Latif Hospital, Wapda Hospital and Lady Willington.

QUALITY OF LIFE VALUES

All classes of people are present in Lahore City; People lead lives according to their income.

CIVIC AMENITIES

Civic amenities like potable drinking water, dispensary and rest area are available near the project site.

GAMES:

Cricket, Football, badminton, Hockey, Volleyball, Kabaddi and Kushti are major sports of Lahore District.

WELFARE OF EMPLOYEES

Management of the project is mindful of the fact that satisfied employees will deliver better output.

HISTORICAL BUILDINGS NEAR THE PROJECT SITE:

Pakistan Radio, Agriculture department, and Punjab Public Service Commission are the historical buildings near the project site.

AESTHETIC VALUES:

Like the general trend among the citizens of the area, most of the people have low awareness of the environment. Even then, some people take cleanliness and neatness of the environment lightly. Some people throw municipal solid wastes (MSWs) on the streets. Sense of personal responsibility to keep the environment clean as good citizens are even now lacking among a few people

CHAPTER # 5

SCREENING OF POTENTIAL ENVIRONMENTAL IMPACTS & THEIR MITIGATION MEASURES

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

IDENTIFICATION OF ALL IMPACTS:

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

METHODOLOGIES FOR IMPACT IDENTIFICATION:

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

PROJECT IMPACT EVALUATION MATRIX

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

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

NA – Not Available
O – Insignificant (No or minimal impact)
LA – Low Adverse (Short term, reversible or less damage to environment)
MA- Medium Adverse (Long term reversible damage to environment)
HA – High Adverse (severe irreversible adverse damage to the environment)
LB – Low Beneficial (Short term benefits or less beneficial to the environment)

MB – Medium Beneficial (Long term benefits to environment)
HB – High Beneficial (Continuous benefits to environment)

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

Social activities	O	O	LB	B	B	B	B	B	B	HB	HB	B	HB	HB	HB	HB	O
Public welfare	O	O	B	B	B	B	B	B	B	HB	HB	HB	HB	HB	HB	HB	LB
Economic activities	LB	O	B	B	B	B	B	B	B	B	HB	B	B	B	B	B	LB
Employment	O	O	O	O	O	O	O	O	O	O	B	B	HB	B	B	B	LB
Infrastructure improvement	LB	MB	HB	B	B	B	B	HB	LB	HB	HB	B	HB	B	B	B	B

Legend:

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

IMPACT ANALYSIS AND PREDICTION:

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

CONSULTATIONS/ CASE STUDIES:

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

MEETINGS:

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

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

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

- Selection of the stakeholders for consultation, reconnaissance of the project site and initial discussions with the neighboring factory workers, villagers, shopkeepers, drivers etc.

- Environmental consultants and social specialists and documenting the opinions of the stakeholders expressed during the meetings etc.

CHARACTERISTICS OF IMPACTS

ENVIRONMENTAL IMPACTS DUE TO PROJECT LOCATION

Project is present in the industrial area of the District Kasur. No nearby human settlement exists within the radius of 500 meter. Unit is establishment of medicinal formulation unit, and unit/ area does not fall in the category of sensitive area and no environmentally sensitive localities exist within radius of study area. The only issue which can arise due to the location of the subject project could be the issue of traffic congestion due to transportation of the construction material at the project site. If the project proponent maintains HSE conditions and comply with the PEQS limits than, there will not be any significant impacts of the project on the environment.

If the mitigation measures are effectively implemented, the residual impact of the Subject project activities on the area's geophysical environment is expected to be insignificant.

Impact significance: Low or may be positive

Nature of impact: Direct

Duration: Long-term

Timing: Operation phase

Reversibility: NA

Likelihood: Low (unlikely),

Consequences: Mild or may be positive

MITIGATION MEASURES FOR LOCATION PHASE IMPACTS

- Project site have good road infrastructure and efficient road infrastructure already exists there that is used currently to access the site and there is no issue of the road congestion due to the wide, good and paved road.
- Location can be considered as the positive impact due to utilization of the product in the same District.
- The project has provided the jobs to the residents as well as to those from the suburban areas.

ENVIRONMENTAL IMPACTS DUE TO THE PROJECT DESIGN

Design phase of the project has been completed because proponent has purchased the already established/ constructed building for medicinal formulation impacts due to design are taken care of the time of design.

RESIDUAL IMPACT:

The residual impact of project activities for the land acquisition & resettlement of the area is expected to be insignificant.

The residual effects are summarized below:

Nature of impact: direct

Timing: Planning stage

Duration: not applicable

Likelihood: Nil

Consequences: no change

Impact significance: Not significant

MITIGATION MEASURES:

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

CHANGES IN LAND USE:

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

RESIDUAL IMPACT:

The residual impact of project activities on land use of the area is expected to be insignificant.

The residual effects are summarized below:

Nature of impact: direct

Duration: not applicable

Likelihood: Nil as it is not involving any constructional activity that may cause change in land use

Consequences: no change

Impact significance: Not significant

ENVIRONMENTAL IMPACTS DURING THE CONSTRUCTION PHASE

Impacts related to the construction phase of the subject project are discussed below

Impacts on the Physical Environment

Soil Erosion and Pollution

There is a possibility of soil erosion and pollution to occur during construction phase of the project. The clearing of vegetation could lead into soil erosion when the cleared land is exposed to natural agents such as wind and surface run-off. Removal of top soil after site clearance by agents such as wind, rain water, and surface run off is a likely action to occur. Similarly, accidental oil spills from construction equipment and discharge of wastewater to the environment might accelerate soil pollution to some extent. Oil spills may infiltrate into soil causing soil pollution and later water pollution during rainy season.

However, this impact is localized around machinery, maintenance areas or garage and areas of concentrated activities. Severity of impact is localized with low intensity due to the nature of project, which shall require minimum number of people during construction and shall not require heavy construction equipment. It is expected that the impacts will be low, local, and they will occur mostly during the construction stage (short term).

Air Pollution

Air pollution is quite likely to occur during construction phase. This is due traffic and other equipment using fossil fuels that release hydrocarbons and other gases including carbon dioxide, nitrous oxides, Sulphur oxides, and particulate matters which may pollute the air. Likewise, activities like land clearing, vehicle movement, excavations for buildings foundations, construction drive ways and landscaping may generate dust especially during the dry season.

Other sources of air pollution will occur due to decomposition and/or burning of the cleared vegetation and dust from gravel drive ways. The level of air pollution originating from the above-mentioned sources are expected to be low, localized and short term. No serious impacts are expected on people and the environment as whole.

Surface Water Pollution

No surface water entity i.e., stream, canal, river is present in the vicinity of the subject project so there no impact of subject project on the surface water.

Impacts on Biological Environment

Impacts on Flora

The clearance of most vegetation during construction to leave space for construction of proposed unit and other building facilities and access roads will bring negative impacts to flora population. Moreover, direct exposure to nitrous oxides (NOx) may cause growth inhibitions in plants to some extent. No special plant species of international conservation importance was recorded at proposed site. The impacts are therefore considered of low significance.

Impacts on Fauna

The nature of the site has not attracted several organisms to find refuge in the area although some including different types of birds, reptiles, amphibians and invertebrates are found. The clearance of vegetation and presence of noisy machinery, trucks and workforce will create unfavorable environment for most of these organisms while crawling organisms will eventually vanish following construction of paved surface.

However, the temporary nature of the construction activities will result in impacts of short-term duration and therefore the impact is considered of low significance.

Impacts on Socioeconomic Environment

Workers Accidents and Hazards during Construction

Construction workers are prone to accidents resulting from construction activities. These accidents may have acute or chronic impacts depending on nature, severity and intensity. In this regard, construction and mobilization activities of the proposed unit could result into accidental injuries and hazards, etc. which could negatively impact the workforce.

Because of the intensive engineering and construction activities including erection and fastening of roofing materials, metal grinding and cutting, concrete work, steel erection and welding among others, construction workers will be exposed to risks of accidents and injuries. At times, such injuries may be from accidental falls from high elevations, injuries from hand tools and construction equipment cuts from sharp edges of metal sheets and collapse of building sections among others.

Vibration and Noise

The level of noise and vibration are likely to increase during the construction phase. The noise will be mainly come from vehicles and equipment operation during construction activities as well as people working on the project construction. This is a short-term impact and it will be felt mostly around construction sites and its peripherals.

There will be no drilling activities or involvement of heavy or high noise machinery. For residential areas located within 20km from the Project site boundary, it is predicted that the construction phase and operation of the proposed project will not pose any significant and the annoyance level is within the “no to little” impact category.

Considering technological advancement in construction industry, it is anticipated that machinery and equipment to be used during construction will be modern, versatile, and quieter than the old ones. It is also likely that they will require fewer numbers of operators reducing noise from workers. Therefore, the levels of noise and vibrations are anticipated to be within the tolerable limits, short term and localized. In view of the above and the fact that construction will concentrate on non-residential area, no significant impact is anticipated and the impact can be highly mitigated.

Employment Opportunities

On the other hand, the proposed project will have, during construction phase, potential positive impact to the local community through provision of employment. It is expected that maximum people will be employed during construction phase. Employment will be in form of managers, skilled labors as well as unskilled laborers. Therefore, apart from employment benefits accruing to local people other national and international experts are likely to be employed by the project especially at senior positions.

Income Generation among Suppliers

During construction phase, the proposed project plan to source most construction materials from local and/or national sources including cement, iron sheets, steel bars, pipes, etc, from local shops. This demand therefore, will create market for local people and/or elsewhere in the country engaged in supplying construction materials leading to significant positive economic benefits to suppliers on short term basis.

Impacts on Security

The presence of laborers and expensive construction equipment, machinery and materials in the sites could potentially pose a security risk at the project site. Furthermore, offenders may capitalize on increased movement during construction and anonymity created by the construction activities to carry out criminal activities in the site and surrounding areas. This impact is likely probable due to low security measures from the fact the site is slightly far from police station(s) that could otherwise prevent criminal activities around the project site.

Accordingly, the impacts on the area's security are considered to be of medium significance. Therefore, appropriate security measures should be provided at the site through fencing, security checks/screening of workers and their guests and 24 hours security watch by expert security men (normally privately contracted) to prevent such criminal activities from happening at the site.

Mitigation Measures

Protection of Flora

In order to protect plant species from potential negative impacts, the proponent shall ensure that:

- The contractor is responsible for informing all employees about the need to prevent any harmful effects on natural vegetation on or around the construction site as a result of their activities;
- Clearing of natural vegetation is kept to a minimum;
- Unnecessary removal, damage and disturbance of natural vegetation are prohibited;
- Re-vegetation of the proposed project site is undertaken;
- Indigenous trees are planted around project area to enhance natural habitat

Land Degradation and Soil Erosion Control

Potential negative impacts on land and soils shall be mitigated by ensuring that:

- The contractor implements erosion control measures as an on-going exercise;
- During construction, the contractor protects all areas susceptible to erosion by installing necessary temporary and permanent drainage works as soon as possible and by taking any other measures necessary to prevent storm water from concentrating in streams and scouring slopes, banks, etc.;
- Any tunnels or erosion channels developed during the construction or maintenance period shall is backfilled and compacted and the areas restored to a proper condition;
- Areas where construction activities have been completed and where no further disturbance would take place are rehabilitated through re-vegetation;
- Ground clearance is minimized and if possible concentrated only to the specific building foundation areas, and only when it is necessary;
- Prompt reclamation of exposed soils is done;
- Construction during long rains period should be done with caution to avoid soil from being washed away;
- Topsoil excavated from buildings foundations is stored for re use on other areas like rehabilitations of quarries.

Soil and Water Pollution Measures

Measures to mitigate soil and water pollution impacts during construction phase shall ensure that:

- Concrete mixing directly on the ground is prohibited and only be undertaken on impermeable surfaces;
- Concrete batching activities are located in an area of low environmental sensitivity;
- All runoff from batching areas is strictly controlled, cement-contaminated water is collected, stored and disposed of at an approved site;

- Contaminated water storage facilities are not left to overflow and appropriate protection from rain and flooding are implemented;
- Unused cement bags are stored out of the rain where runoff won't affect it;
- Used (empty) cement bags are; collected, stored in weatherproof containers to prevent windblown cement dust and water contamination, not to be used for any other purpose and shall be disposed of on a regular basis via the solid waste management system;
- All excess concrete is removed from site upon completion of concrete works and disposed of whilst preventing washing of the excess concrete into the ground;
- Entrance or accidental spillage, of solid matters, contaminants, debris and other pollutants and wastes into surface and ground water is prevented;
- Awareness of employees to prevent unnecessary oil spills and protection of environment in their daily duties is promoted; and
- All excess aggregate is removed from site and properly disposed.

Waste Management

To ensure that solid waste is properly managed and potential negative impacts are mitigated, the contractor shall ensure that:

- All facilities are maintained in a neat and tidy condition. Measures to reduce the negligent behavior with regard to the disposal of all refuse are taken, bins, containers and refuse collection facilities for later disposal are provided at all places of work;
- Solid waste may be temporarily stored on site in a designated area prior to collection and disposal;
- Waste storage containers are covered, tip-proof, weatherproof and scavenger proof;
- No burning, on-site burying or dumping of waste shall occur;
- Inert construction rubble and waste materials are disposed of by burying in the borrow pits or a designated site;
- All excavated materials, debris from construction works are not to be stockpiled or deposited near or on stream banks or other watercourse perimeter where they can be washed away by high water or storm runoff or can any way enters to water sources itself;
- Metal refuse bins or equivalent plastic refuse bins, all with lids, are provided to all buildings;
- Domestic refuse is collected and removed from all facilities at least twice per week and transported to the approved refuse disposal site in covered containers or trucks;
- Used oil, lubricants, cleaning materials, etc. from the maintenance of vehicles and machinery are collected in holding tanks and sent back to the supplier;

- Runoff from fuel depots / workshops / machinery washing areas and concrete batching areas is collected into a conservancy tank and disposed of designated site

Air Quality Control

The contractor shall ensure air quality by undertaking the following measures:

- Ensure that the generation of dust is minimized and implement a dust control program to maintain a safe working environment, minimize nuisance for surrounding residential areas/dwellings and protect damage to natural vegetation, crops, etc.;

- Exposed soil and material stockpiles shall be protected against wind erosion and the location of stockpiles shall take into consideration the prevailing wind directions and locations of sensitive receptors;

- To minimize the pollution caused by dust generation during the construction stage, water will be sprinkled on the construction site and on drive ways as frequently as possible;

- To minimize exhaust fumes, machinery and equipment shall not be running when not in use while ensuring that they regularly serviced; and

- Construction vehicles and machinery shall be equipped with pollution-control devices to minimize emissions

Vibration and Noise Control

Vibration and noise produced by construction work will be manages as follows:

- The contractor shall strive to keep noise generating activities to a minimum;

- The contractor shall restrict all operations that result in undue noise disturbance to local communities and/or dwellings (e.g. drilling etc.) to daylight hours on weekdays;

- The contractor shall inform in advance any local communities and/or residents that could be disturbed by noise generating activities such as drilling or compacting and shall try to keep such activities to a minimum;

- The contractor shall be responsible for compliance with the relevant legislation with respect to noise;

- Provision of earplugs and earmuffs to the workers working in high peak noises during the construction stage;

- Use of modern low noise machinery and vehicles is recommended;

- Activities that may involve noises and vibration should be withheld at night especially close to human dwellings.

Landscape and Topography

As construction activities are very likely to lead to negative impact on landscape and topography at project site, such impacts will be brought to a minimum by executing the following measures:

- Planting of appropriate indigenous trees, grass cover and other vegetation types on project area should be encouraged so as to enhance scenic beauty of the area; and
- Removal and proper disposal of construction debris need to be affected after completion of construction works and shall not be stockpiled or deposited near or on water sources or other watercourse perimeter where they can be easily be washed away by high water or storm runoff or can any way enter these sources.

Occupation Health and Safety Measures

The following safety measure should be observed during the construction stage:

- Provision of health and safety induction course to all workers;
- Instilling proper code of conduct and work ethics among construction workers and ensure that they are observed;
- Provision of Personal Protective Equipment (PPE) to all workers and enforce their use;
- Installing first aid kit and hire trained personnel to provide first aid;
- Reporting to OSHA within 24 hours of occurrence of any accident or near miss which can cause fatal or permanent disability; and
- Workers should be educated on their own safety and safety of others;
- For covid-19 prevention it is recommended:
- Workers are well-trained to practice and implement social distancing.
- No one is allowed to enter the premises of the project site without wearing proper mask.
- Personal hygiene practices are ensured and labor is trained for it by the contractor and the management of the unit.
- The proponent/contract provides masks to all the construction workers on daily basis and sanitizers are available at specific points of the project site

IMPACT SIGNIFICANCE OF ECOLOGICAL IMPORTANCE

NATURAL VEGETATION

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

ASSESSMENT OF IMPACT:

A significant impact will be interpreted if unnecessary or excessive removal and burning of plants for fuel wood is observed.

Nature of impact: Direct

Duration: long term

Timing: construction phase

Reversibility: irreversible

Likelihood: moderate

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

Impact significance: significant

MITIGATION MEASURES:

The following mitigation measures will reduce any impact on vegetation:

- Do not park vehicles on green belts/ grass
- Unnecessary damage to vegetation will strictly be avoided.
- Proponent will plant trees and other species after construction phase

RESIDUAL IMPACT:

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

FAUNA

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

Nature of impact: Direct

Duration: short term

Timing: construction phase

Reversibility: not applicable

Likelihood: low

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

Impact significance: not significant

Residual Impact:

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

SOCIAL IMPORTANCE

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

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

Nature of impact: Direct

Duration: Short term

Timing: construction phase

Reversibility: reversible

Likelihood: low

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

Impact significance: slightly significant

CULTURAL ISSUES:

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

Mitigation Measures: Good relations with the local communities will be promoted by encouraging contractor to provide opportunities for skilled and unskilled employment to the locals, as well as on-the-job training in construction for young people. Project manager will restrict his staff to mix with the locals to avoid any social problem.

Contractor will keep the copies of Computerized National Identity Cards (CNIC) of his workers and will warn them not to involve in any theft activities. And if anyone would involve, he will

have to pay heavy penalty. Similarly, at the time of employment contractor has to take care that the workers should be of good repute. The contractor camp will be properly fenced and main gate will be locked at night with a security guard to check the theft issues.

Contractor will also be the responsible for the sensitivity towards the local customs and traditions.

Nature of impact: Direct

Duration: Short term

Timing: construction phase

Reversibility: reversible

Likelihood: low

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

Impact significance: slightly significant

ACCIDENT RISKS:

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

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

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

Nature of impact: Direct

Duration: Short term

Reversibility: not applicable

Likelihood: moderate

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

Impact significance: significant

PRIVACY ISSUES:

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

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

Nature of impact: Direct

Duration: Short term

Reversibility: reversible

Likelihood: low

Consequences: low, as contractor will take care of the matter

Impact significance: slightly significant

SHARING OF RESOURCES:

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

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

Nature of impact: Direct

Duration: Short term

Timing: construction phase

Reversibility: reversible

Likelihood: low

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

Impact significance: significant

NOISE PROBLEMS:

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

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

Nature of impact: Direct

Duration: Short term

Reversibility: reversible

Likelihood: Moderate

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

Impact significance: significant

MOBILIZATION ISSUES:

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

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

Nature of impact: Direct

Duration: Short term

Timing: construction phase

Reversibility: reversible

Likelihood: low

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

Impact significance: slightly significant

ENVIRONMENTAL STANDARDS

TOPOGRAPHY:

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

RESIDUAL IMPACT:

The residual impact of project activities on the topography of the area is expected to be insignificant.

The residual effects are summarized below:

Nature of impact: direct

Timing: construction Phase

Likelihood: Nil

Consequences: no change

Impact significance: Not significant

LAND ACQUISITION RESETTLEMENT:

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

RESIDUAL IMPACT:

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

ENVIRONMENTAL IMPACTS DURING OPERATION STAGE

AIR QUALITY POTENTIAL IMPACT:

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

- Dust raised on dirt tracks by project-related vehicles.
- Combustion products (nitrogen oxides, sulfur dioxide, particulate matter, carbon monoxide, and volatile organic compounds) from vehicles used for project-related activities

ASSESSMENT OF IMPACT

1) **DUST EMISSIONS:**

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

2) **GASEOUS EMISSIONS:**

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

Nature of impact: Direct

Duration: long term

Timing: operation/ construction

Reversibility: irreversible

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

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

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

MITIGATION MEASURES

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

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

RESIDUAL IMPACT:

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

NOISE LEVEL:

Noise may be a major concern during the operation phase. It can be generated from the machinery used during operational activities. Generators can be another source of noise pollution.

Nature of impact: Direct

Duration: long term

Timing: operation/ construction

Reversibility: Not applicable

Likelihood: moderate

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

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

MITIGATION MEASURES:

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

RESIDUAL IMPACT:

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

Conclusion

Management of M/s WelBro Pharmaceuticals has to achieve the following goals.

- Identification of regulatory requirements that apply to the project activities in the context of environmental protection.
- Identification of the environmental features of the project area and the likely impact of the project on the environment,
- Recommendation of appropriate mitigation measures that management will incorporate into the project implementation to minimize all adverse environmental impacts.
- Baseline environmental and socioeconomic information collection from a variety of sources, including field surveys.

The impacts of project in area will be insignificant, provided the generic mitigation measures proposed in this report are implemented.

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

HEALTH:

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

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

Nature of impact: Indirect

Duration: Long term

Timing: operation phase

Reversibility: reversible

Likelihood: moderate

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

Impact significance: significant

SAFETY:

Project activities could become a hazard as it is located in populated area local people, especially children, are likely to gather around to watch the activity. The other safety issue is that of traffic, especially along access roads close to settlements. To reduce the hazards, the following mitigation measures will be implemented:

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

Nature of impact: Direct

Duration: long term

Timing: construction / operation phase

Reversibility: irreversible

Likelihood: moderate to high

Consequences: moderate if all safety measure will be taken care

Impact significance: Significant

SOLID WASTE/ SLUDGE MANAGEMENT:

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

Nature of impact: Direct

Duration: Short term

Timing: operation

Reversibility: Not applicable

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

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

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

MITIGATION MEASURES:

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

POTENTIAL POSITIVE IMPACTS*:*

The project is envisaged to have followed major positive impacts;

EMPLOYMENT OPPORTUNITIES:

Establishment of M/s WelBro Pharmaceuticals will help in generating new jobs for the local population. The requirement of Managers, Engineers, Workers, technicians, skilled and unskilled labor etc. will generate employment opportunities. It is estimated about 20-25 persons will be employed during operational phase. Hence, there is large number of employment opportunities especially for the locals of the district.

INCREASE IN BUSINESS:

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

IMPROVED INFRASTRUCTURE:

Establishment of M/s WelBro Pharmaceuticals will improve the infrastructure of the area as proponent has incorporated aesthetic values and regeneration of site in its planning stage.

ECONOMIC BENEFITS:

M/s WelBro Pharmaceuticals is a medicinal formulation unit and it will be a great investment for the economy of our country. In the long run it will positively impact not only the local population but also the economy of Pakistan.

Main environmental issues associated with Project operation are as follows.

- Health and safety issues for workers may arise during the project process e.g., Particulate matter may be generated during the project process, which may cause the health issues for the workers and noise of machinery can also be a negative impact on the health of workers.

- Waste water due to domestic and process activities.
- Fire due to short circuits and other activities.
- Solid waste generation due to domestic and project related activities.
- Noise pollution from generator and other machinery.
- Health hazards including the electricity hazards.
- Emissions will be generated from working of generators.
- Sludge from wastewater treatment facility will be generated.
- Vehicle access is required especially for transportation. The site is well served with the road network. Heavy traffic will be allowed only during tight time during operational phase. The traffic issues at any stage of project life cycle will not arise.

Impact significance: moderate to high or may be negative

Nature of impact: direct

Duration: Long-term

Timing: operational phase

Reversibility: NA

Likelihood: moderate to high

Consequences: moderate to high or may be negative

RECOMMENDATIONS

- Safety of workers should be ensured through proper training and PPEs must be ensured during the working hours.
- Wastewater treatment facility should be constructed within the premises of the unit.
- A well design firefighting system will be constructed to cope with fire situations in the subject project.
- Solid waste bins have been placed and placed Solid waste bins should be regularly cleaned and solid waste must be handed over to contractor.
- Sludge from the wastewater treatment facility will be handed over to the certified contractors.
- Noise levels should not exceed the PEQS.

POTENTIAL ENVIRONMENTAL ENHANCEMENT MEASURES

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

- Sprinkling of water will be done on dusty roads and tracks.
- PPEs will be provided during construction activity.
- Local people will be informed in advance when work is about to start in an area.
- Machinery will never be left unattended.
- Efforts should also be made to discuss traffic conditions so that regular traffic is not disturbed. Transporters engaged for the project would be forced to adhere to the load specifications of the access road. No overloading would be allowed in any case.
- Machinery will be kept maintained.
- Waste water will be treated through waste treatment system that will be installed within the premises of the subject project.
- Area will be restored with native plants. A proper tree plantation plan will be formulated to save the environment.
- It is recommended that Solid waste should be handed over to contractors and agreement should be made.
- Noise will be controlled by adopting proper measures.
- PPEs will be provided to workers during working.
- Firefighting equipment's and system will be installed.
- Safety signs will be placed at all locations where required.
- Hygienic conditions will be ensured and proper quality will be maintained by quality control testing.
- First aid facilities will be made available.

PURPOSE OF MITIGATION MEASURES

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

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

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

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

WHERE AND HOW THE PROBLEM SHOULD BE ADDRESSED?

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

WHYS OF ACHIEVING MITIGATION MEASURES

Improved monitoring and management practices:

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

COMPENSATION IN MONEY TERMS:

M/s WelBro Pharmaceuticals will adopt such plan that will assure the minimum impact on the environment and health by implementing proper mitigation measures.

REPLACEMENT, RELOCATION AND REHABILITATION:

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

CHAPTER # 6

ENVIRONMENTAL MANAGEMENT AND MONITORING PROGRAM

PURPOSE AND OBJECTIVES OF THE EMP:

The primary objectives of the EMP are to:

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

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

MANAGEMENT APPROACH:

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

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

INSTITUTIONAL CAPACITY

Following functionaries will be involved in the implementation of EMP:

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

SCHEDULE OF IMPLEMENTATION

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

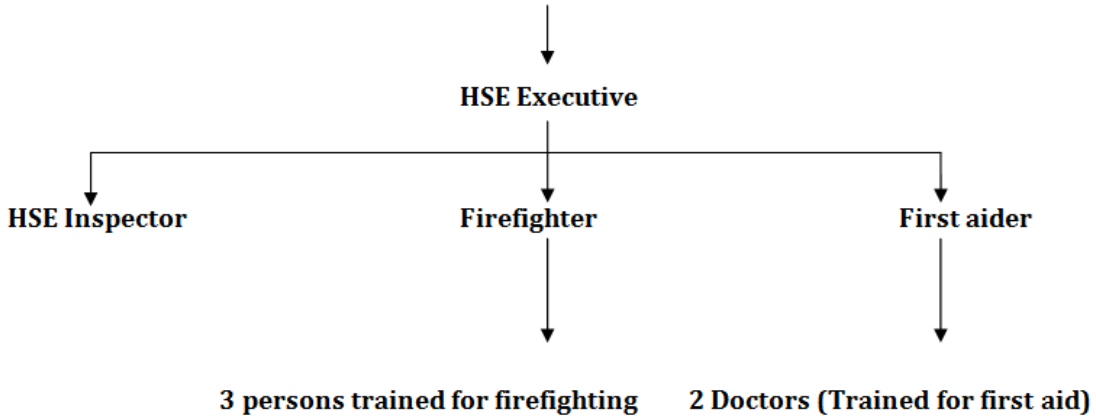


Figure: Institutional Capacity for the implementation of EMP

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

Following schedules of training will be implemented:

Table: Training Program

Sr. No.	Description of program	Personnel involved	Time/ duration
1)	General HSE Training	Trainers and whole production facility staff	Regularly as planned by HSE Manager
2)	Instrument use/ workplace specific items	Trainers and whole production facility staff	Regularly as planned by HSE Manager
3)	PPEs use and safe work practices at work site.	Trainers and whole production facility staff	Regularly as planned by HSE Manager

4)	Reporting and investigating accidents/ incidents	Trainers and whole production facility staff	Regularly as planned by HSE Manager
5)	Emergency procedures	Trainers and whole production facility staff	Regularly as planned by HSE Manager
6)	Medical and first aid	Trainers and whole production facility staff	Regularly as planned by HSE Manager
7)	Health and safety promotion	Trainers and whole production facility staff	Regularly as planned by HSE Manager

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

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

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

TRAINING OF BUILDING CONTRACTOR

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

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

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

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

PROPOSED ENVIRONMENTAL MONITORING

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

- **AMBIENT AIR**

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

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

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

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

RESPONSIBILITY OF EMP

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

EQUIPMENT MAINTENANCE DETAIL

The subject project is the establishment of medicinal formulation unit under the name of M/s WelBro Pharmaceuticals. The company will maintain the records for Health Safety & Environment and will hire HSE manager to check and deal with the HSE issues. The company shall maintain PPEs, medical facilities, firefighting Equipment's as fire buckets, fire hydrants and fire extinguishers and records for their periodic filings or replacement.

ENVIRONMENTAL BUDGET

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

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

HSE training	On regular basis
Maintenance and management of environment	On regular basis
Maintenance of equipment	On regular basis
Availability of PPEs	During production hours

Strategic planning to cope with any emergency	As per policy
Formulate the disaster management plan to cope with natural disaster	As per policy

ENVIRONMENTAL MANAGEMENT PLAN OF M/s WelBro Pharmaceuticals

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

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

7	Waste water	Domestic waste water. Minor wastewater from production activities. Spread of diseases, underground water contamination.	Domestic waste water is being drained out in industrial estate drain after treated in septic tanks An appropriately designed septic tank is being used to treat sewage/waste water to achieve PEQS. Periodic cleaning of septic tank is recommended.	HSE department	Environmental Consultant
Solid waste generation					
8	Solid Waste Generation	Aesthetic degradation, foul smell etc. Solid waste generation from the machinery installation and production activities, domestic and process sources	A solid waste management plan should be formulated to deal with the proper disposal of solid waste, supervised by HSE Manager. Waste segregation is recommended at the source. Industrial ecology practices will be adopted wherever possible. 7 R's of sustainability is recommended Hazardous waste should be disposed in separate bins and handed over to EPA approved contractors. Waste produced from building alteration/renovation should be sold to local market.	HSE Department	Environmental Consultant/ EPA PUNJAB
Odor					
9	Odor	Odor may produce from raw material and during product manufacturing	Raw material should be covered to reduce odor Face masks must be provided to the workers and employees on production floor	HSE Department	Environmental Consultant/ EPA PUNJAB
Energy requirement					

10	Energy requirement	Resource depletion	Do not waste the energy/electricity when there is no need of it. Use energy efficient and ecofriendly equipment Use energy saving appliances Conduct and maintain records for energy audits Do not leave the appliances in running when there is no need It is recommended to save and conserve the energy and adopt energy efficient technologies in the factory.	HSE Department	Environmental Consultant/ EPA PUNJAB
Socio economic impacts					
12	Language	Change in cultural language	Maximum employment of Local people is recommended to preserve the local cultural language. It will help in communication with the local people to resolve any emerging issue near the project area	Proponent	NA
13	Education	Change in social behavior and economic gains	School and colleges exist in the area. The project proponent will initiate an educational awareness program with the coordination of the local people.	Proponent	NGO survey
14	Health	Social performance of the individuals in the area	The project proponent will assist the local impacted community for the improvement of health services Health clinic must be established for the project workers.	Proponent	Proponent
15	Culture and norms of the area	Change in culture by the influx of nomadic people	Maximum local employment should be ensured to preserve the culture of the area	Proponent	NGO survey/Environmental Consultant

16	Sewage and waste disposal	Diseases caused by improper sanitation	Subject project will uplift the economic status of the nearest human settlements. Awareness program will be initiated regarding the disposal of waste.	Proponent/ local NGO	NGO survey/ Environmental Consultant

CHAPTER # 7

STAKEHOLDERS PARTICIPATION

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

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

OBJECTIVES OF CONSULTATION

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

The important general objectives of the consultation process are:

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

METHODOLOGY OF CONSULTATION:

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

- Selection of the stakeholders for consultation, reconnaissance of the project site and initial discussions with the neighboring industry workers, villagers, shopkeepers, drivers etc.

- Environmental consultants and social specialists and documenting the opinions of the stakeholders expressed during the meetings etc.

PROPONENT

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

RESPONSIBLE AUTHORITY

Management of M/s WelBro Pharmaceuticals is the responsible authority to take all measures prior to start the activity.

ENVIRONMENTAL PRACTITIONERS AND EXPERTS

Team of M/s Pak Green Enviro-Engineering Pvt. Ltd visited the project site, had discussions with stakeholders and consulted with the local people of nearby and other villages to evaluate the project socio-economic impacts. People provide the massive information about the project and have positive remarks regarding the project development.

OTHER DEPARTMENTS AND AGENCIES

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

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

AFFECTED & WIDER COMMUNITY

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

Categories of stakeholders interviewed in the project area:

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

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

ISSUES DISCUSSED:

Following issues were discussed during the stakeholder consultation:

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

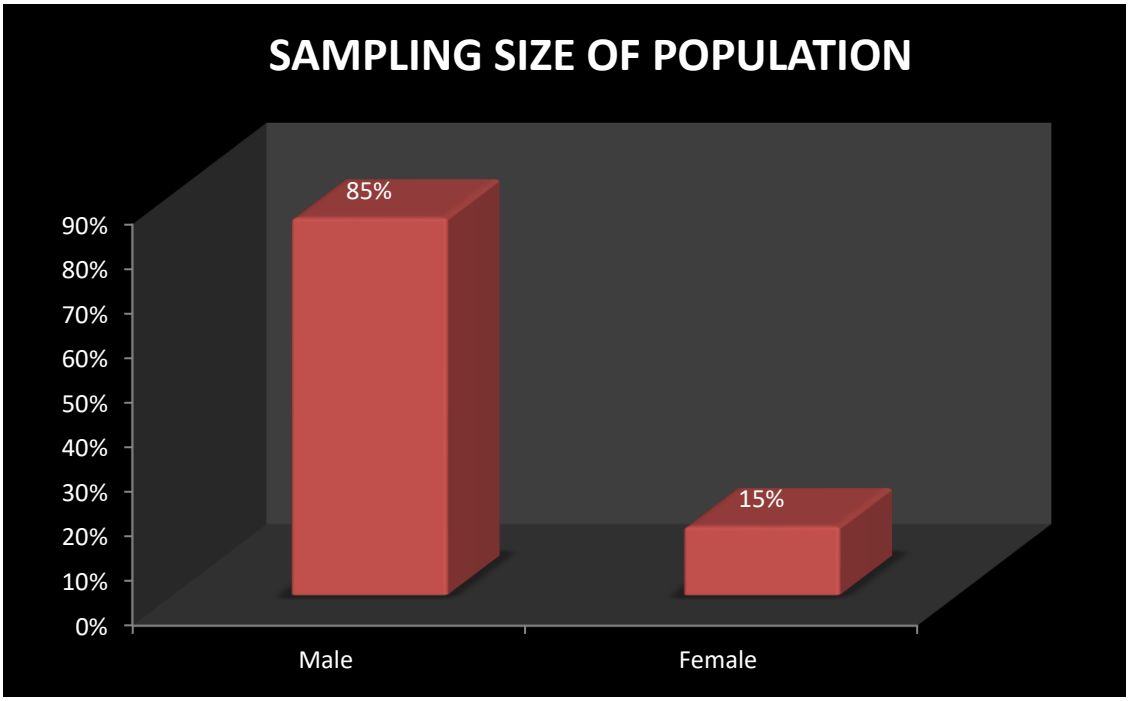
SAMPLE SIZE

Sample size of 30 respondents was selected by the Team of consultants for conducting the socioeconomic survey. Women were also consulted for the said survey; some of their names are mentioned in the above list of respondents while most of them were not willing to give personal information.

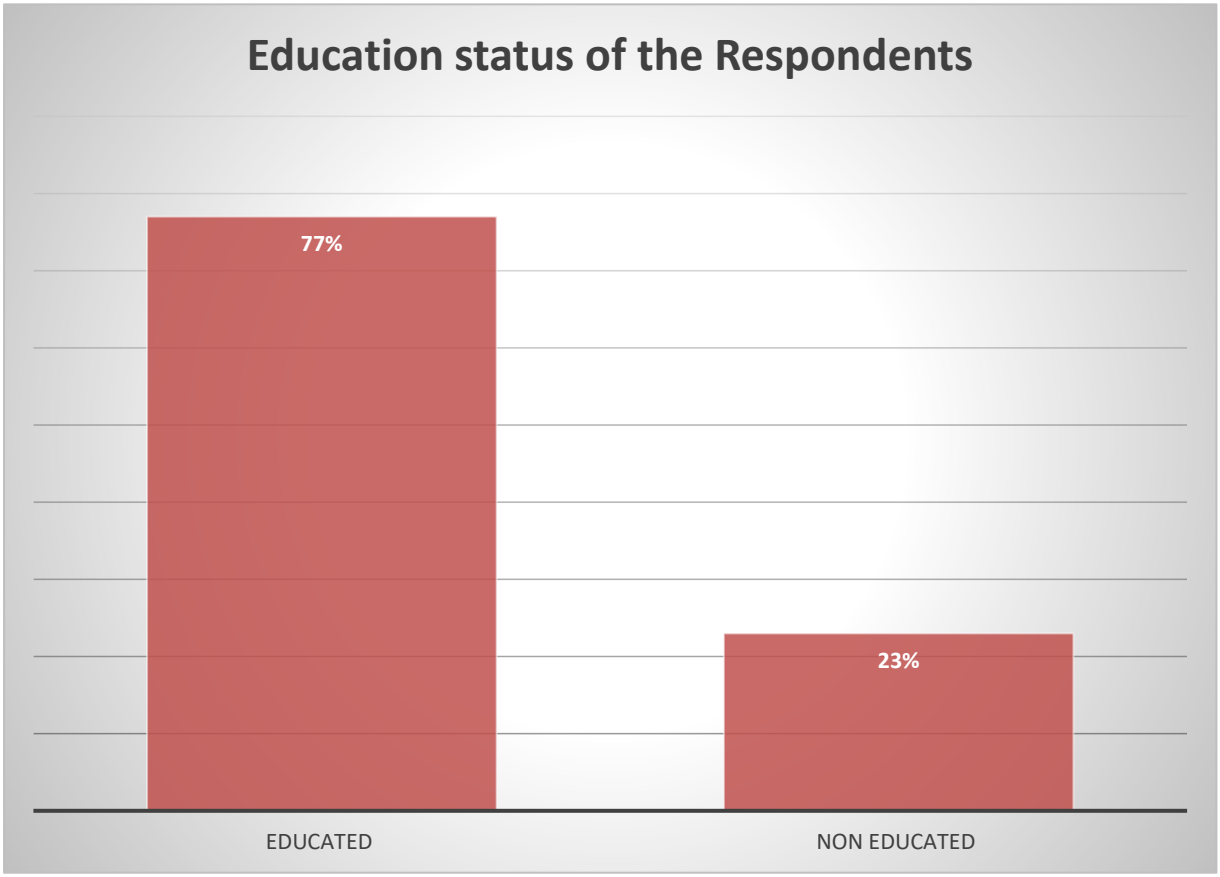
STATISTICAL ANALYSIS

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

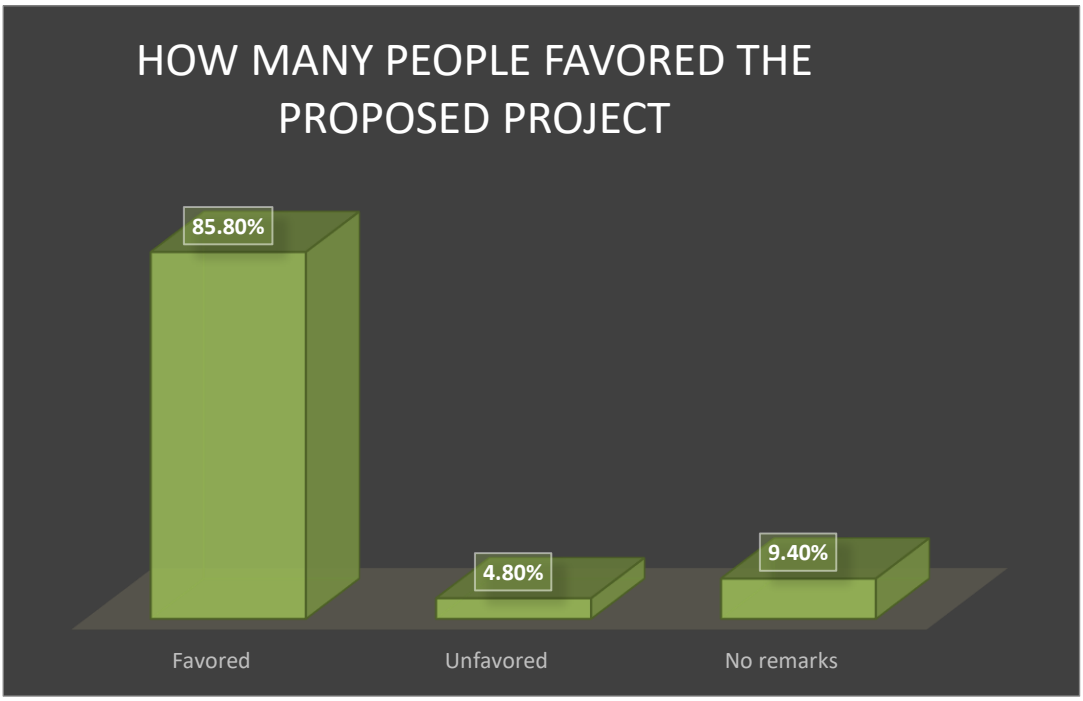
Graphical representation of analysis is given below:



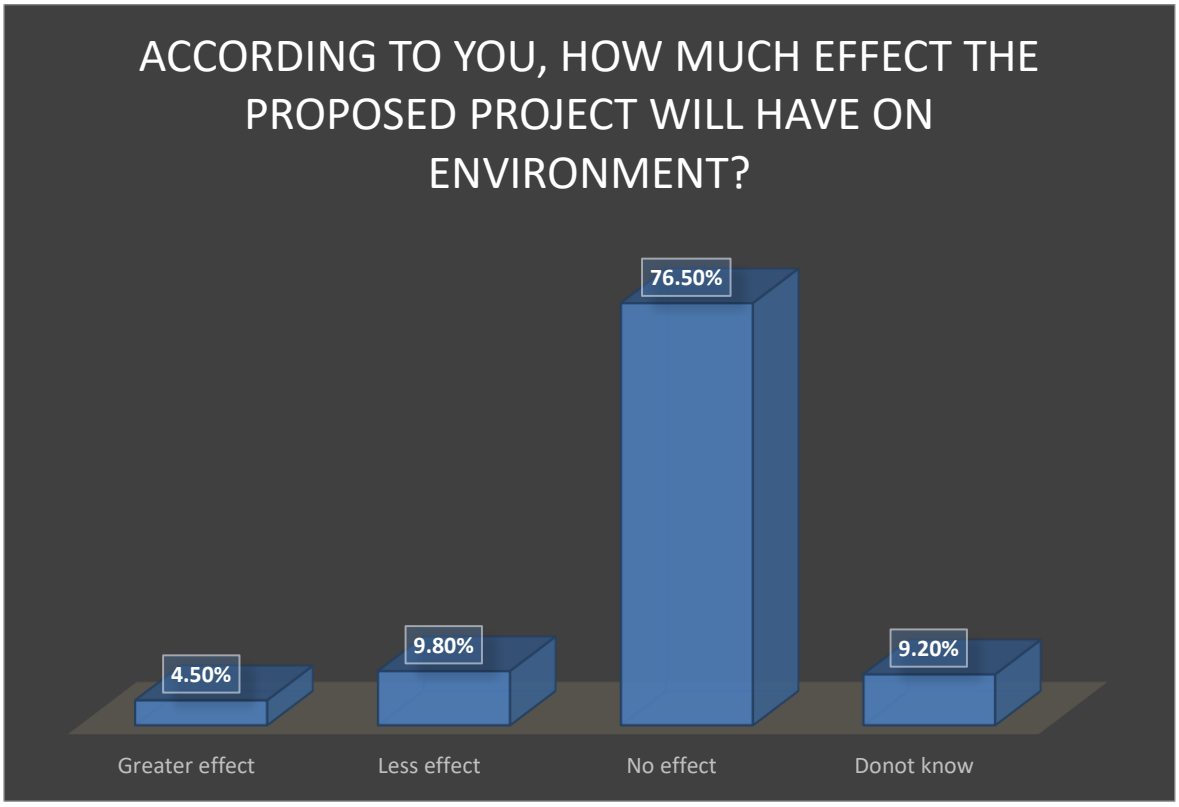
In the sampled population, 85% respondents were male while 15% respondents were female. The number of female respondents is less as compared to male respondents because according to the social binding female hesitates to respond or communicate comfortably.



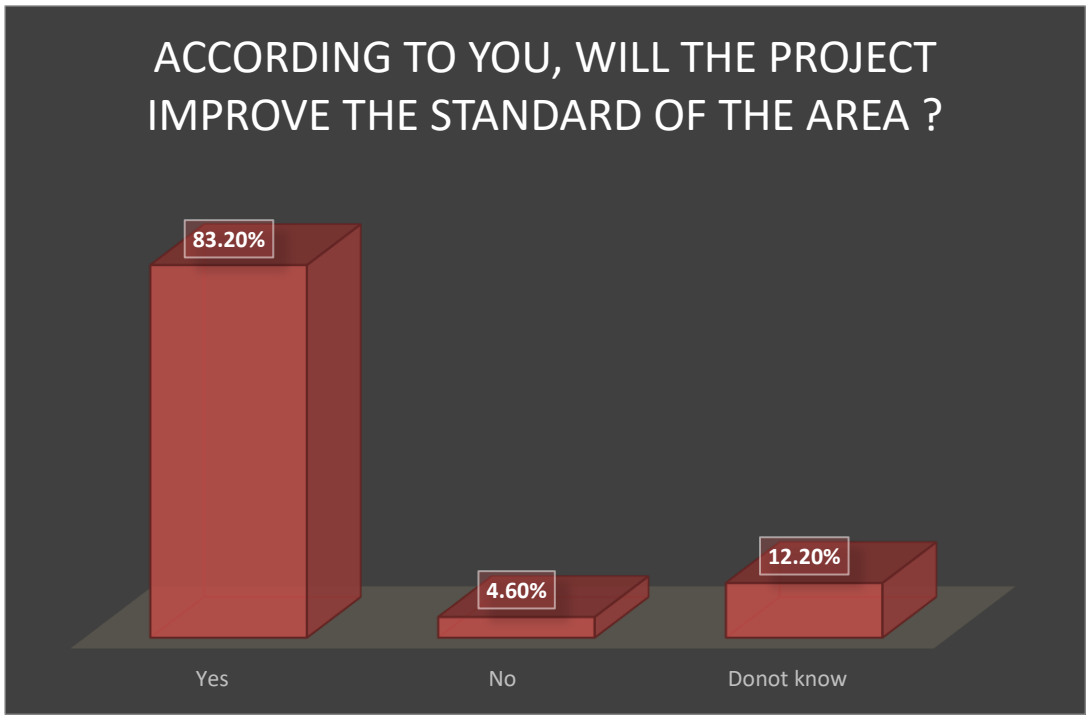
In the sampled population, 77% respondents were educated while 23% were uneducated. Overall education status of the area is good.



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



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



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

FINDINGS OF THE OVERALL DISCUSSION:

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

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CHAPTER # 8

CONCLUSION AND RECOMMENDATIONS

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

CONCLUSIONS

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

RECOMMENDATIONS

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