



ENVIRONMENTAL IMPACT ASSESSMENT REPORT

Dr. Zia Pharmaceuticals

Plot No. 721-A, Sundar Industrial Estate, Lahore

REPORT PREPARED BY:



M.A.C.E Engineering Consultants

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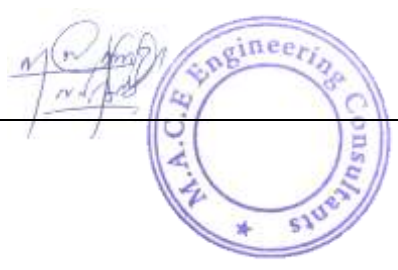
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REPORT RECORD AND ISSUE DETAILS

PROJECT:	Environmental Impact Assessment Report of Dr. Zia Pharmaceuticals Proposed project of construction of Homeopathic, Nutraceutical and Herbal medicines pharmaceutical manufacturing building
CLIENT:	M/s Dr. Zia Pharmaceuticals
ADDRESS:	Plot No. 721-A, Sundar Industrial Estate, Lahore.
REPORT REF NO.:	M.A.C.E/Env/EIA/DZP/018



REVISION RECORD					
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EIA	01	01	13 November 2021	Mr. Hamza Afzal	

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List of Abbreviations

AAQM : Ambient Air Quality Monitoring	DMP : Disaster Management Plan
APHA : American Public Health Association	GLC : Ground Level Concentration
APCM : Air Pollution Control Measure	HAZOP : Hazard & Operability Study
APTI : Air Pollution Tolerance Index	ISCST : Industrial Source Complex Short term
BDL : Below Detectable Limit	ISO : International Standard Organization
CP : Cleaner Production	MOC : Material Of Construction
CPCB : Central Pollution Control Board	MoEF : Ministry of Environment & Forest
CHWIF : Common Hazardous Waste & Incineration facility	MSL : Mean Sea Level
CSR : Corporate Social Responsibility	MSDS : Material Safety Data Sheets
EAC : Expert Appraisal Committee	NH : National Highway
EIA : Environmental Impact Assessment	NOC : No Objection Certificate
EC : Environment Clearance	OSHA : Occupational Safety And Health Administration
EHS : Environment, Health & Safety	PM : Particulate Matter
EMP : Environment Management Plan	PPEs : Personal Protective Equipments
EMS : Environment Management System	RA : Risk Assessment
EPA : Environmental Protection Act	TOR : Terms of Reference
ETP : Effluent Treatment Plant	

EXECUTIVE SUMMARY

Introduction

Dr. Zia Pharmaceuticals is one of the leading importers, exporters and manufacturers of Homeopathic, Nutraceutical and Herbal medicines in Pakistan since 1951. Dedicated to innovating healthcare, Dr. Zia Pharma is directed towards developing novel solutions for unmet medical needs.

Now, management of Dr. Zia Pharmaceuticals want to construct the new industry for the manufacturing of Homeopathic, Nutraceutical and Herbal medicines at Plot No 721-A Sundar Industrial Estate, Raiwind Road, Lahore.

Total area of the land is 222800 SFT including boundary wall, parking area, roads, and other developments and the total covered area of the proposed construction is 34212 SFT approx.. At current, the location of proposed construction unit is an open land. The total cost the project will be 35 million. The production capacity of the proposed project is 1,680,000 pieces per year.

The proponent of subject proposed project is applying and submitting Environmental Impact Assessment (EIA) report 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 unit believes in sustainable development and equally concern about environment preservation and pollution control. The unit proposes to provide adequate Environmental Management System to meet desired norms for their subjected project as per the statutory recruitments and also prepared to put its continuous endeavor for the pollution prevention (if any) and betterment of environment..

Details of Project Proponent

Name Zeeshan Zia
Designation Proponent
Address House # 67-B, Khayban-e-Badban, D.H.A Phase -7, Karachi, Tehsil & District South Karachi

Scheduling Of The Project

According to the Notification No. Dir (EIA)/EPA/02/2017 dated: 29-03-2018 pharmaceuticals units fall under category of Chemical Projects mentioned in Schedule-II, Clause-B, point 2 of Review of IEE/EIA Regulations 2000, hence such projects require submission of EIA Report to obtain Environmental Approval, under Section 12 of Punjab Environmental Protection Act 1997 (Amended 2012).

Details of Consultant

M/s Dr. Zia Pharmaceuticals has appointed M.A.C.E Engineering Consultants as an EIA Consultant for the project.

Company Name M.A.C.E Engineering Consultants
Address Office # 7, Noor Jehan Road, Near Attock petrol Pump, Block C 2,
 Gulberg III, Lahore..
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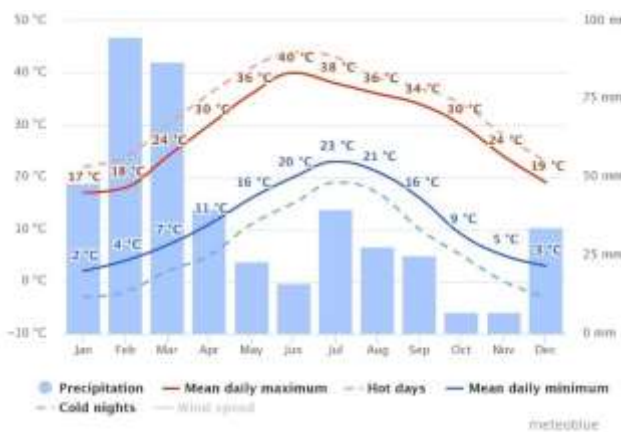
Brief Description Of The Project

Project	Dr. Zia Pharmaceuticals
Proponent	M/s Dr. Zia Pharmaceuticals
Project Nature	Manufacturing of Homeopathic, Nutraceutical and Herbal medicines
Storeys	Ground Floor, First Floor, Second Floor
Total Area	222800 SFT
Covered Area	34212 SFT
Location	Plot No 721-A Sundar Industrial Estate, Raiwind Road, Lahore
Coordinates	31°17'15.55"N 74°11'11.76"E Front: Access Road Back: Boundary Wall of industrial Estate Left: Access Road Right: Industrial Building
Production Capacity	1,680,000 pieces per year.
Cost of Project	35 million





Environmental Conditions of the Site



Major Impacts & Their Mitigations

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

Construction Phase		
Potential Impact	Criteria for determining Significance	Key Mitigation Measures
Dust Emissions— Dust and PM may be generated during road construction and excavation activities. Gaseous emissions from site generators and transportation vehicles may affect ambient air quality in the vicinity of the project site.	An increase in visible dust beyond the boundaries of the construction site or Concentration of PM₁₀ in excess of 150 µg/m³ NEQS for Ambient Air	Sprinkling of water on dusty roads, tracts and surfaces is recommended; During excavation works drop heights will be minimized to control the fall of materials reducing dust escape; Use of wind shield around stockpiles is recommended; Vehicle speed restrictions should be applied in the project area; Raw materials should be transported in covered trucks;
Solid waste Management— If solid waste will not be managed properly, it may cause negative impacts	Generation of excessive waste; Recyclable waste and reusable waste is discarded, Littering, Improper disposal.	Constructional waste should be utilized for road filling and maintenance purposes; Domestic waste should be disposed off properly, handed over to contractors, placed in bins; Proper solid waste management plan should be devised and implemented.
Waste water - water used in construction process and excessive water generate as wastewater and it also produced from campsite domestic activities	NEQS parameters	Waste water after treatment should be drain out in nearby drain
Construction Noise- Noise may be generated during landscaping activities and from generators and transportation vehicles at the project site; which may be a nuisance for the workers.	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 national and OSHA standards, following recommendations are suggested to take action against

		the high noise levels: • Proper tuning of construction machinery and vehicles is recommended. • Ear muffs and ear plugs are recommended in case of high noise levels. • Rubber wounds should be placed underneath the generator to avoid the vibration.
Vegetation Loss/ Soil erosion— Minor negative impact may arise as only some weeds and grasses are present at the project site which will be cleared for the purpose of construction.	Unnecessary or excessive removal of trees and shrubs.	No tree cutting/ vegetation loss issue will be involved in the subject project as project site is free of any dense vegetation and trees. Preparation of a Reinstatement Plan to restore the land after the constructional activities is recommended.
Soil Contamination—Oil and Chemical spills can contaminate the soil.	Presence of visible amount of hydrocarbon in soil	Provision of spill prevention and control kits; Use of impermeable surfaces in workshops, and storage areas; Contaminated soil will be collected and incinerated.
Traffic issues— Traffic issues may arise due to the constructional activities at the project site if traffic will not be managed properly.	TEPA rules	Traffic impact assessment study should be conducted at the project site; Speed limit of 10 km/h should be maintained on the access road; Ample parking area must be allocated at the project site. Guards should be hired to manage the traffic at the project site.
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	No community complaints. Increased employment facilities in the area; 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.

due to increased infrastructure, employment opportunities and economic growth.		Employment opportunities should be provided to the local people.
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Operational Phase	
Potential Impact	Key Mitigation Measures
Dust Emissions- Particulate matter emissions during project activities can deteriorate the air quality in the working area and be a nuisance for the workers' health. Gaseous emissions from site generators and transportation vehicles can result in deterioration of ambient air quality of the outdoor environment.	PPEs i.e. masks have been provided to workers during the working hours. Proper ventilation should be ensured 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.
Machinery Noise- Working of machinery can be a nuisance for the workers in the working area.	PPEs i.e. ear muffs have been 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 has been conducted to avoid the accidents at regular basis 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 during admitted by management. Use of PEP's has been 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 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 have been placed at suitable areas at unit, contract has been made with local contractor.

	Domestic and process related waste should be handed over to contractors.
Groundwater —The increased withdrawal of groundwater for the project will affect the groundwater resources of the project area	No impact on the community groundwater needs is envisaged as a result of the project (ensured by management)

Proposed Environmental Monitoring

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

Sr. No.	Components	Parameters	Frequency
	Wastewater Quality	All parameters as per PEQS	Quarterly
1	Ambient Air Monitoring	All parameters as per PEQS	Quarterly
2	Noise Level	All parameters as per PEQS	Quarterly
3	Water quality	All parameters as per PEQS Some parameters on site, Others in lab	Quarterly

1 CHAPTER 1: INTRODUCTION OF PROJECT

1.1 Preamble

Dr. Zia Pharmaceuticals is one of the leading importers, exporters and manufacturers of Homeopathic, Nutraceutical and Herbal medicines in Pakistan since 1951. Dedicated to innovating healthcare, Dr. Zia Pharma is directed towards developing novel solutions for unmet medical needs.

Now, management of Dr. Zia Pharmaceuticals want to construct the new industry for the manufacturing of Homeopathic, Nutraceutical and Herbal medicines at Plot No 721-A Sundar Industrial Estate, Raiwind Road, Lahore.

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The unit believes in sustainable development and equally concern about environment preservation and pollution control. The unit proposes to provide adequate Environmental Management System to meet desired norms for their subjected project as per the statutory recruitments and also prepared to put its continuous endeavor for the pollution prevention (if any) and betterment of environment.

1.2 Project Proponent

Table 1: Details of Proponent

Name	Zeeshan Zia
Designation	Proponent
Address	House # 67-B, Khayban-e-Badban, D.H.A Phase -7, Karachi, Tehsil & District South Karachi

1.3 Scheduling Of The Project

According to the Notification No. Dir (EIA)/EPA/02/2017 dated: 29-03-2018 pharmaceuticals units fall under category of Chemical Projects mentioned in Schedule-II, Clause-B, point 2 of Review of IEE/EIA Regulations 2000, hence such projects require submission of EIA Report to obtain Environmental Approval, under Section 12 of Punjab Environmental Protection Act 1997 (Amended 2012).

1.4 Need Of EIA Study

As stated earlier that according to the notification No. Dir (EIA)/EPA/02/2017 dated: 29-03-2018 pharmaceuticals units fall under category of Chemical Projects mentioned in Schedule-II, Clause-B, point 2 of Review of IEE/EIA Regulations 2000, hence such projects require submission of EIA Report to obtain Environmental Approval, under Section 12 of Punjab Environmental Protection Act 1997 (Amended 2012).

The purpose of the Environmental Impact Assessment study and report is to comply with the guidelines issued by the EPA as a part of the process to obtain Environmental Approval / NOC. Most importantly the purpose of EIA study is to identify and mitigate environmental impacts in a timely manner.

1.5 Objectives Of EIA Study

Environmental Impact Assessment (EIA) is a planning tool to give the environment its due place in the decision-making process by clearly evaluating the environmental consequences of an activity before action is taken. Thus, the main objective of EIA is to determine as precisely as possible, within the present limits of knowledge and expertise, the likely environmental impacts of a planned development activity and incorporate efficient environmental protection measures right at the planning stage of project in such a way that the residual adverse effects become acceptable or almost none. The objectives of the present environmental impact assessment study are briefly described below:

- To integrate environmental protection and economic decisions at the earliest stages of planning an activity.
- To identify and assess environmental, social, economic, and cultural consequences of a proposed activity and to delineate plans for the mitigation of adverse impacts resulting from the proposed activity.
- To provide for the involvement of the public, Government department and Government agencies in the review of the proposed activities.

Thus, by using EIA tool both environmental and economic benefits can be achieved, such as reduced cost & time of project design & implementation, avoided treatment/clean-up costs, impacts of laws and regulations, etc.

1.6 Purpose Of EIA Study

The concept of EIA has corollaries in the long run for almost all development activity because sustainable development depends on protecting the natural resources which is the foundation for further development. The main purposes of doing environmental impact assessment study are:

- To assess the prevailing environmental status within the study area around the project site.
- To critically analyze the various activities of the proposed project and identify potential sources of environmental pollution.
- To assess the impacts of the proposed project on the environment.

- To identify and assess significant impacts of proposed project on environmental components through matrix method.
- To suggest preventive and mitigation measures to minimize or avoid the adverse impacts on the environment and to maximize the beneficial impacts.
- To prepare Environmental Management Plan (EMP) and delineate post-project environmental monitoring program to be pursued by the industries.
- To prepare an EIA Study report and utilize it for applicable statutory clearances for project and/or any other management purpose.

Thus, the present EIA study will help the proponent in their planning of effective control measures to avoid or minimize the likely adverse impacts on environment due to their project.

1.7 Brief Description Of Project

1.7.1 Nature, Size & Location Of Project

Dr. Zia Pharmaceuticals is one of the leading importers, exporters and manufacturers of Homeopathic, Nutraceutical and Herbal medicines in Pakistan since 1951. Dedicated to innovating healthcare, Dr. Zia Pharma is directed towards developing novel solutions for unmet medical needs.

Now, management of Dr. Zia Pharmaceuticals want to construct the new industry for the manufacturing of Homeopathic, Nutraceutical and Herbal medicines at Plot No 721-A Sundar Industrial Estate, Raiwind Road, Lahore.

Table 2: Salient Features of the Project

Project	Dr. Zia Pharmaceuticals		
Proponent	M/s Dr. Zia Pharmaceuticals		
Project Nature	Manufacturing of Homeopathic, Nutraceutical and Herbal medicines		
Storeys	Ground Floor, First Floor, Second Floor		
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Production Capacity	1,680,000 pieces per year.		
Cost of Project	35 million		

1.8 Structure Of Report

The EIA report has been structured covering various aspects like project description, baseline conditions, environmental impacts, mitigation measures, environmental management plan. Further, the present EIA report has been prepared chapter-wise in accordance with generic structure suggested by EPA in EIA Checklist.

The present report of the EIA study for the project of manufacturing of medicine of M/s Dr. Zia Pharmaceuticals has been prepared in the following structure

Summary

Chapter 1, Introduction; gives rationale and overview of the Project, need for Environmental Impact Assessment study, its objectives and finally structure of the report.

Chapter 2, Project Description; gives a rather detailed account of the Project particularly emphasizing those Project components which are of importance in relation with environmental and social aspects.

Chapter 3, Analysis of Alternatives; describes the analysis of alternatives, which could be site alternative, design or technology alternatives.

Chapter 4, Stakeholders and Public Consultations; deals with the outcome of the consultation carried out with the local communities, knowledgeable people, public representatives, etc. It discusses the concern of various types of the people and provides an outline how these have been addressed within the study of the Project.

Chapter 5, Environmental and Social Baseline Conditions; provides information about the environmental and social settings of the Project Area including geology, climate, flora, fauna, water resources, socioeconomic conditions etc.

Chapter 6, Environmental and Social Impacts and Mitigation Measures; identifies the potential impacts due to the implementation of Project on the physical, biological and social environment of the Project Area.

Chapter 7, Environmental Management and Monitoring Plan; outlines the environmental management plan, identifies the roles and responsibilities to implement EMMP, suggest monitoring frequencies of various parameters and EMMP costs etc

Chapter 8, Conclusion and Recommendations; sums up the report and conclusions and recommendations resulting from the study

1.9 Details of Consultant

M/s Dr. Zia Pharmaceuticals has appointed M.A.C.E Engineering Consultants as an EIA Consultant for the project. The authority letter in favor of M.A.C.E Engineering Consultants by the proponent of M/s Dr. Zia Pharmaceuticals is attached in **Annexure-A**.

Table 3: Details of Consultant

Company Name	M.A.C.E Engineering Consultants
Address	Office # 7, Noor Jehan Road, Near Attock petrol Pump, Block C 2, Gulberg III, Lahore..
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E-mail	info@maceconsultants.com

1.9.1 EIA Study Team

Table 4: EIA Study Team

Sr. #	Designation	Name & Qualification	Experience
1.	Lead Environmental Professional	Sidra Afzal M.Sc Environmental Engineering	10 Years' Experience
2.	Legal Expert	Ahsan Shabbir LLB	10 Years' Experience
3.	Senior Environmental Professional / Author of the report	Hamza Afzal M.Sc Environmental Engineering	5 Years' Experience
4.	Monitoring & Evaluation Expert	Ihsan Nidir B.Com	15 Years' Experience
5.	Associate Environmental Professional	Alghaya M.Phil. Environmental Sciences	4 Years' Experience
6.	Associate Environmental Professional	Azka Tuseef M.Sc Environmental Engineering	3 Years' Experience
7.	Associate Environmental Professional	Hira Khalid M.Sc Environmental Engineering	3 Years' Experience

2 CHAPTER 2: PROJECT DESCRIPTION

2.1 Type of Project

The project is neither an inter linked project nor an interdependent project. The proposed project is pharmaceutical manufacturing unit. For the manufacturing of the proposed products, equipment and machinery will be installed & utilized. The project falls under Schedule-II, Clause-B, point 2 of Review of IEE/EIA Regulations 2000.

2.2 Need For The Project

Nutraceuticals are products, which other than nutrition are also used as medicine. Nowadays, nutraceuticals have received high interests due to their potential nutritional and safety profile, other than therapeutic capability. Pharmaceutical and nutritional companies are aware of the changing trends which are due to the advantages of these compounds. Most of the nutraceuticals possess multiple therapeutic benefits.

The market for ayurvedic medicines is estimated to be expanding at 20% annually. Sales of medicinal plants have grown by nearly 25% in past ten years, the highest rate of growth in the world. According to Export Import Bank, the international market for medicinal plant related trade having a growth rate of 7% per annum. China's share in world herbal market is US\$ 6 billion while India's share is only US\$1 billion.

It is estimated that nearly three fourths of the herbal drugs used worldwide were discovered following leads from local medicine. According to WHO about 25% of modern medicines are descended from plants first used traditionally. Recently even developed countries, are using medicinal systems that involve the use of herbal drugs and remedies. Undoubtedly the demand for plant derived products has increased worldwide. The demand is estimated to grow in the years to come fueled by the growth of sales of herbal supplements and remedies..

2.3 Project Location

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.

The subject project is in existing industrial premises located in the sundar industrial estate area. Location map of the project site and key infrastructure map are given below and annexed in **Annexure-B**.



Figure 1: Current Status of Proposed Project Site – Pic 1



Figure 2: Current Status of Proposed Project Site – Pic 2



Figure 3: Google Earth Map of Project Site

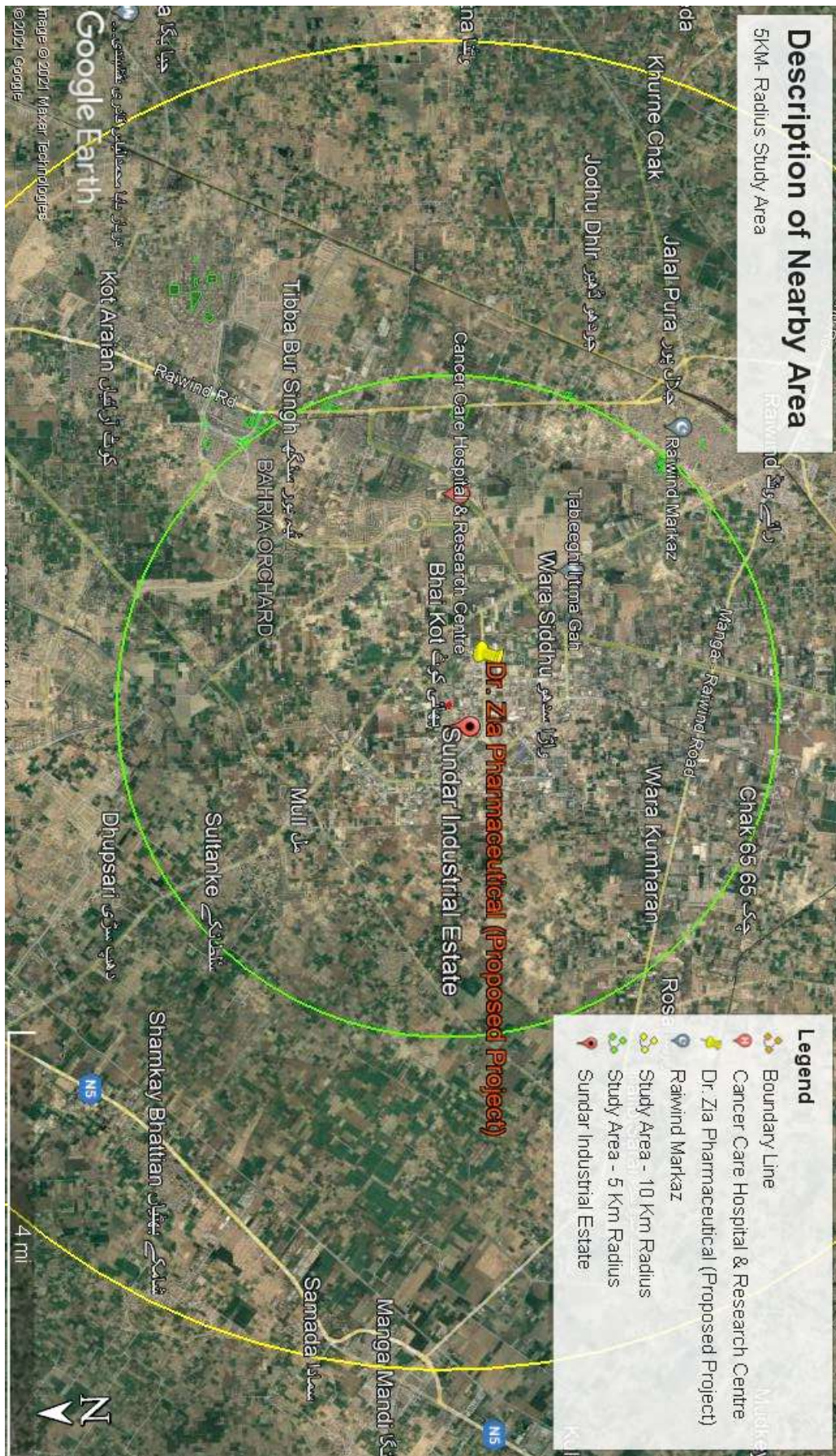


Figure 4: Description of Nearby Area

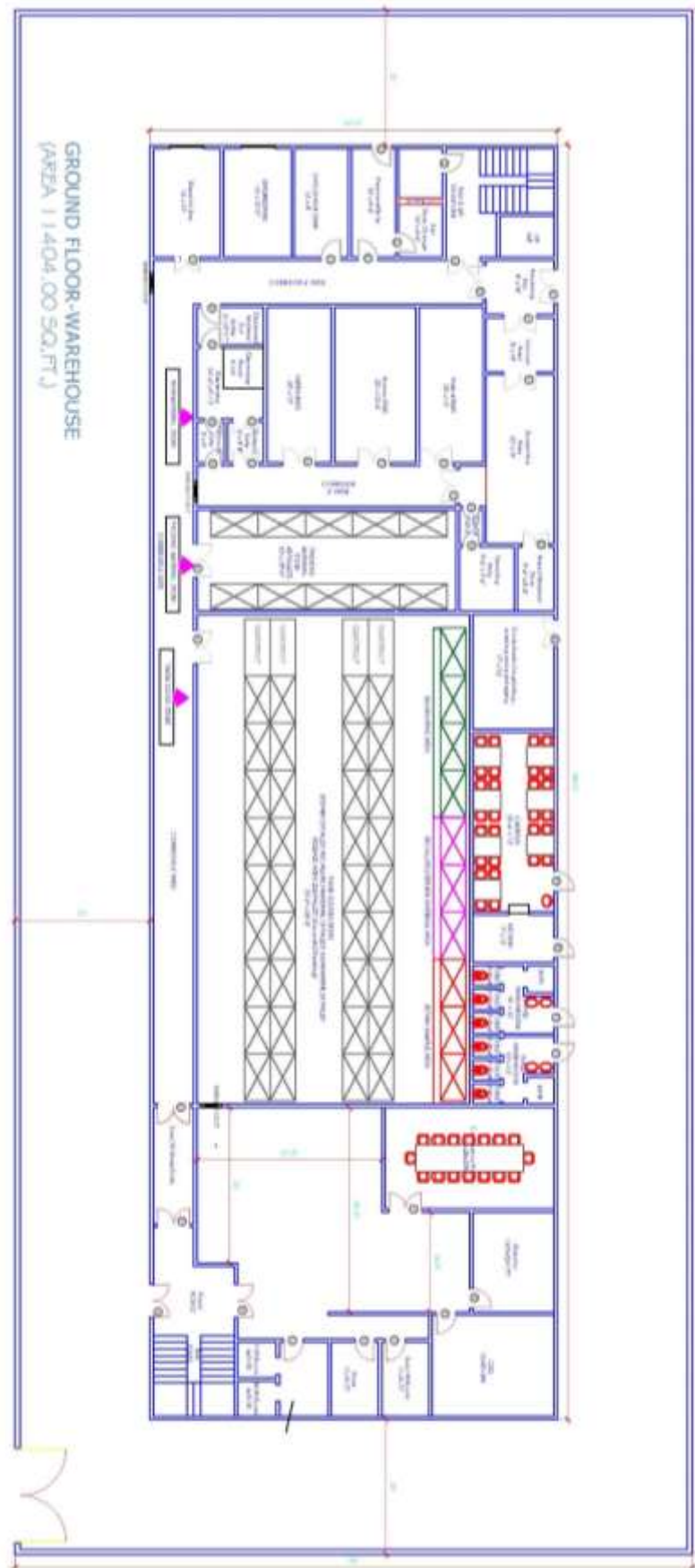


Figure 5: Ground Floor Plan of proposed project building

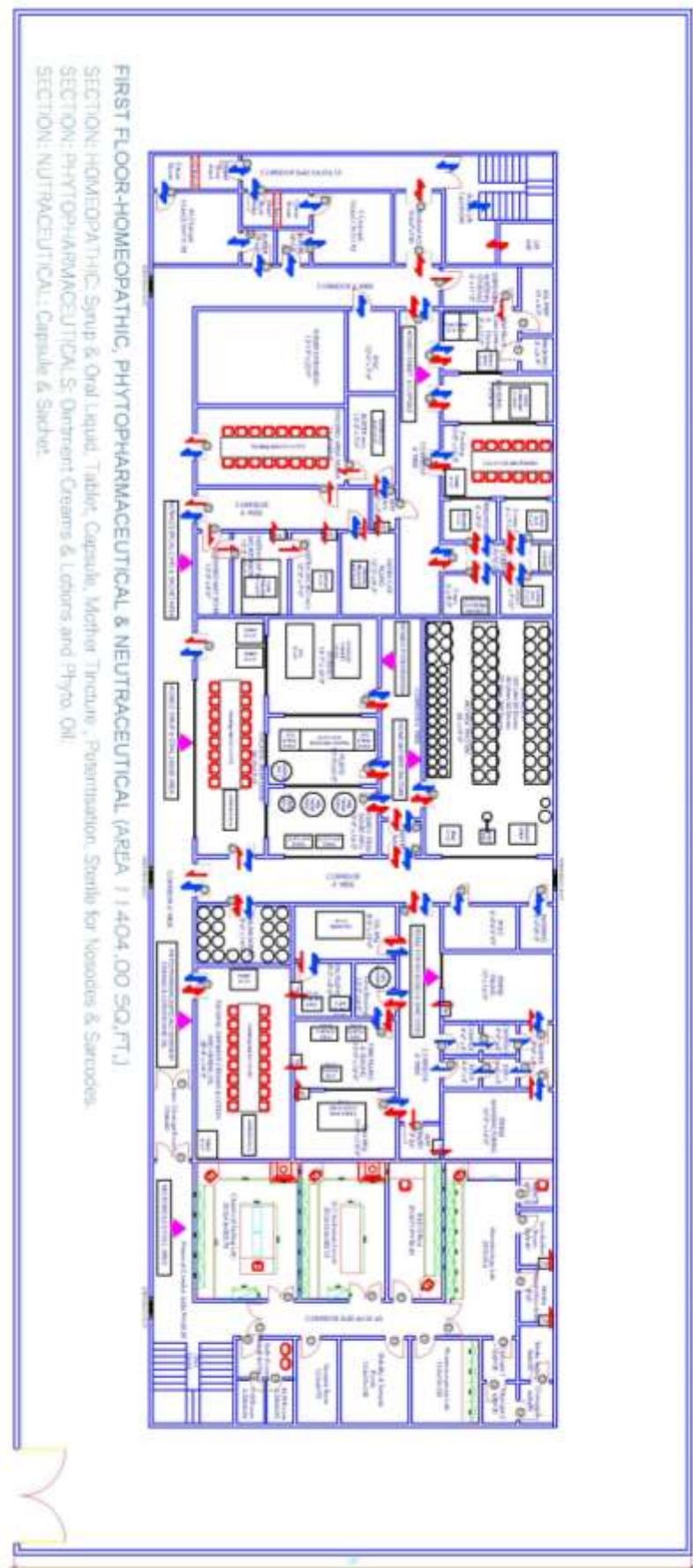


Figure 6: First Floor Plan of proposed project building

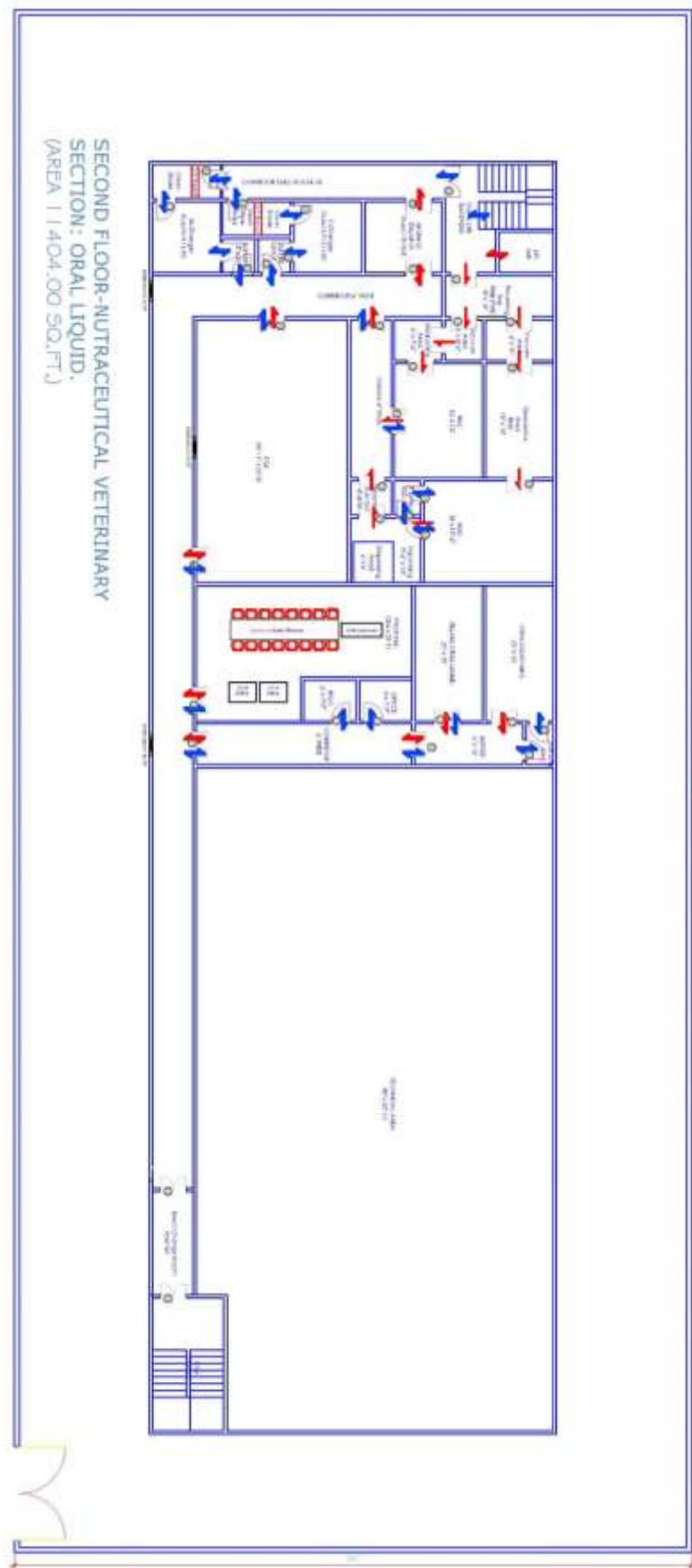


Figure 7: Second Floor Plan of proposed project building

2.4 Land Use & Vegetation Features On Site

The At the present the land is an open plot. There is no vegetation present at the site. There are no trees not any plants exist on site. Land falls in industrial area.

2.5 Access Road

As the unit is in the industrial estate. There is the two roads that access the unit which are front and left side of the unit. Further, Raiwind road is main access road to industrial estate that is connect to Lahore ring road.

2.6 Cost & Magnitude of the Project

The project is to be housed in R.C.C. enclosure with buildings of production halls, quality control, packing areas, manufacturing areas, maintenance shops, laboratory, stores, overhead water tanks, admin block, service facilities and specially designed warehouses for finished products.

Total area of the land is 222800 SFT including boundary wall, parking area, roads, and other developments and the total covered area of the proposed construction is 34212 SFT approx.. At current, the location of proposed construction unit is an open land. The total cost the project will be 35 million. The production capacity of the proposed project is 1,680,000 pieces per year. The layout map is annexed in **Annexure-B**.

2.7 Schedule of Implementation

Detailed feasibility studies and designing of the project have been completed. Necessary legal, administrative and financial formalities have been also completed upto some extant and remaining are in process. The project is expected to be completed within 12 months from the date of environmental approval. Subsequently the operational and maintenance aspects of the project will be undertaken by the proponent.



Figure 8: Proposed Implementation Schedule

2.8 Project Product Description

According to the drug regulation Authority of Pakistan, M/s Dr. Zia Pharmaceuticals have permission for manufacturing of Tables, liquid & semi-solid products. Certificate form Drug Regulation Authority of Pakistan is annexed in **Annexure-D**.

2.8.1 Raw Material

M/s Dr. Zia Pharmaceuticals purchases raw material from different vendors. List of raw material is given below. Further, list of active and inactive raw material is also annexed in **Annexure-E**.

Table 5: List of Raw Materials

LIST OF RAW MATERIALS	
S.No	Name of Raw Material
1	Abies nigra
2	Abroma augusta folia
3	Abroma augusta radix
4	Abrotanum
5	Acalypha indica
6	Acidum phosphoricum
7	Aconitum napellus
8	Actaea spicata
9	Adonis vernalis
10	Aesculus hippocastanum
11	Aethusa cynapium
12	Agaricus muscarius
13	Agnus castus
14	Aletris farinosa
15	Alfafa (Medicago sativa)
16	Allium cepa
17	Allium sativum
18	Alnus rubra
19	Aloe socotrina
20	Apis mellifica
21	Apocynum cannabinum
22	Aralia racemosa
23	Arjuna
24	Armoracia sativa-Cochlearia Rust
25	Arnica montana

2.8.2 Production Process

The production process of whole unit is explained via process flow. Further, production process flow of each product is also given below. These process flows are also annexed in **Annexure- F** and list of machinery is annexed in **Annexure-C**.

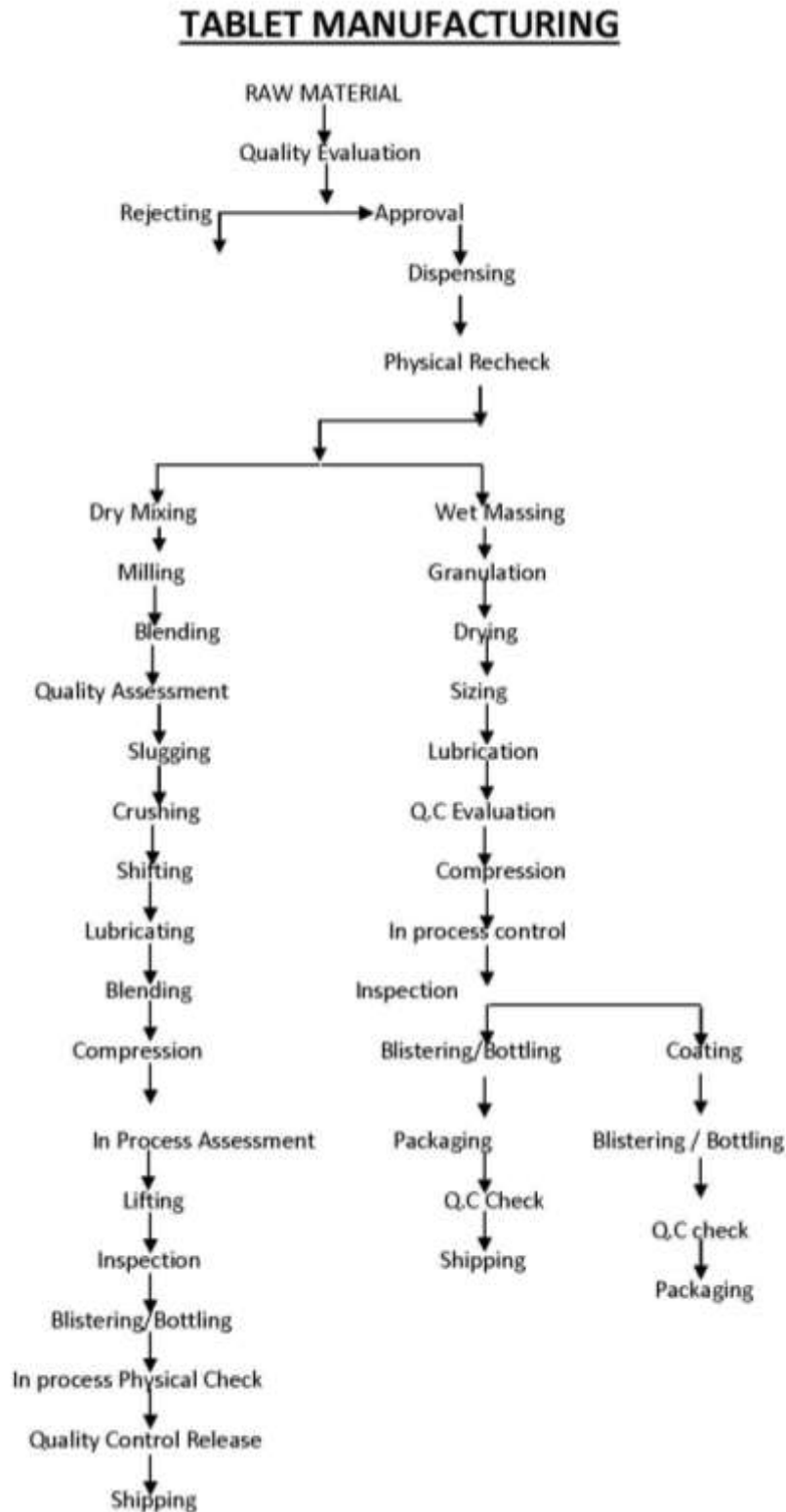


Figure 9: Process Flow Chart for Tablet Manufacturing

LIQUID MANUFACTURING

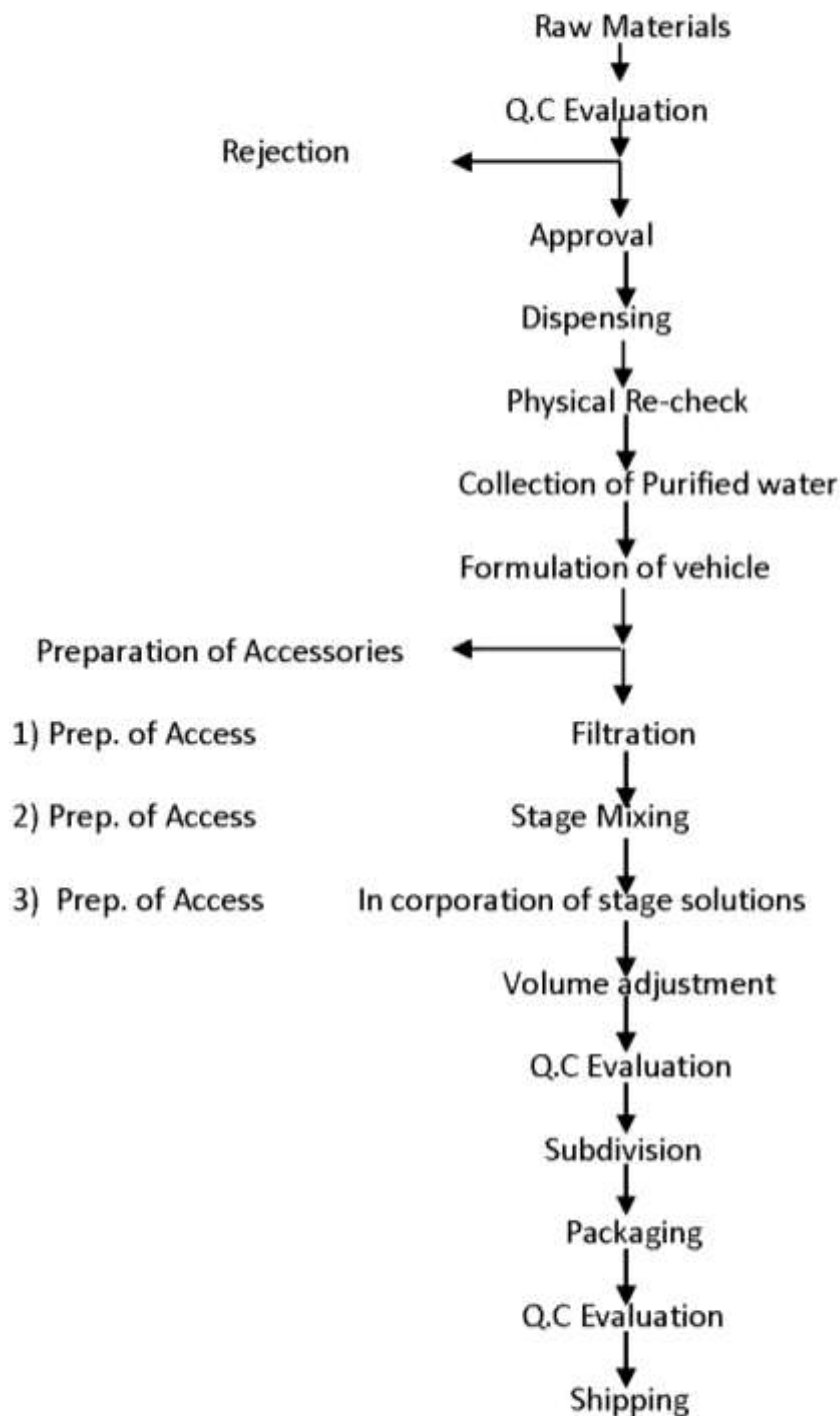


Figure 10: Process Flow Chart for Liquid Manufacturing

Semi-Solid Manufacturing:

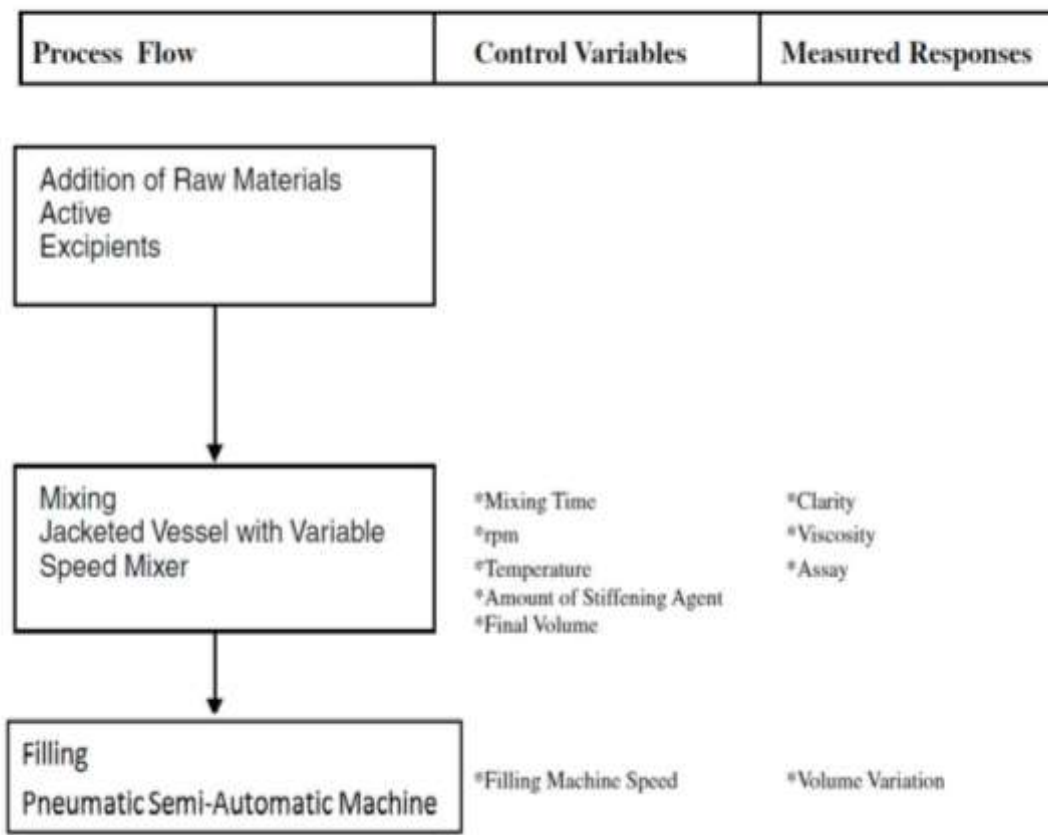


Figure 11: Process Flow Chart for Semi Solid Manufacturing

2.8.3 Final Products

The detailed list of final products is annexed in **Annexure-I**. Further, general categories of final products and capacities are given below:

Table 6: List of Final Products & Production Capacities

LIST OF FINAL/FINISHED PRODUCTS					
S.No	Name of Final products	Yearly Production in pcs	S.No	Name of Final products	Yearly Production in pcs
1	Asthmazee	60,000	15	Feverol-Z	60,000
2	Damiana M	60,000	16	Gastroll	60,000
3	Diabetic compound	60,000	17	Ginozee	60,000
4	Fossin complex	60,000	18	Ironol-Z	60,000
5	Gastrozee	60,000	19	Liverol-Z	60,000
6	Influenza Z	60,000	20	Smoker's Detox	60,000
7	Nephrozee	60,000	21	All allergies	60,000
8	Rauwolfia Z	60,000	22	Colic	60,000
9	Sinus Z	60,000	23	Calm	60,000

10	Deworm Z	60,000	24	Cough & cold	60,000
11	Alfalfa-Z	60,000	25	Earache	60,000
12	Arthfit	60,000	26	Pain & Fever	60,000
13	Coughzee	60,000	27	Teething	60,000
14	Femin H	60,000	28	Sinus all in one	60,000
Total Products Annually 1,680,000 pieces					

2.9 Water Consumption & Wastewater Disposal

In constructional phase, 1200 l/d water will be used. During the operational phase of the project, there is a RO Plant having capacity of 250 liter per hour for mixing purposes and approx. 1m3/day water will be required for domestic purposes. Waste water only produced from domestic usage that will be also in small quantity and will be treated through septic tank and disposed into Industrial Wastewater collection system. Detail Design of Septic Tank is annexed in **Annexure-B**.

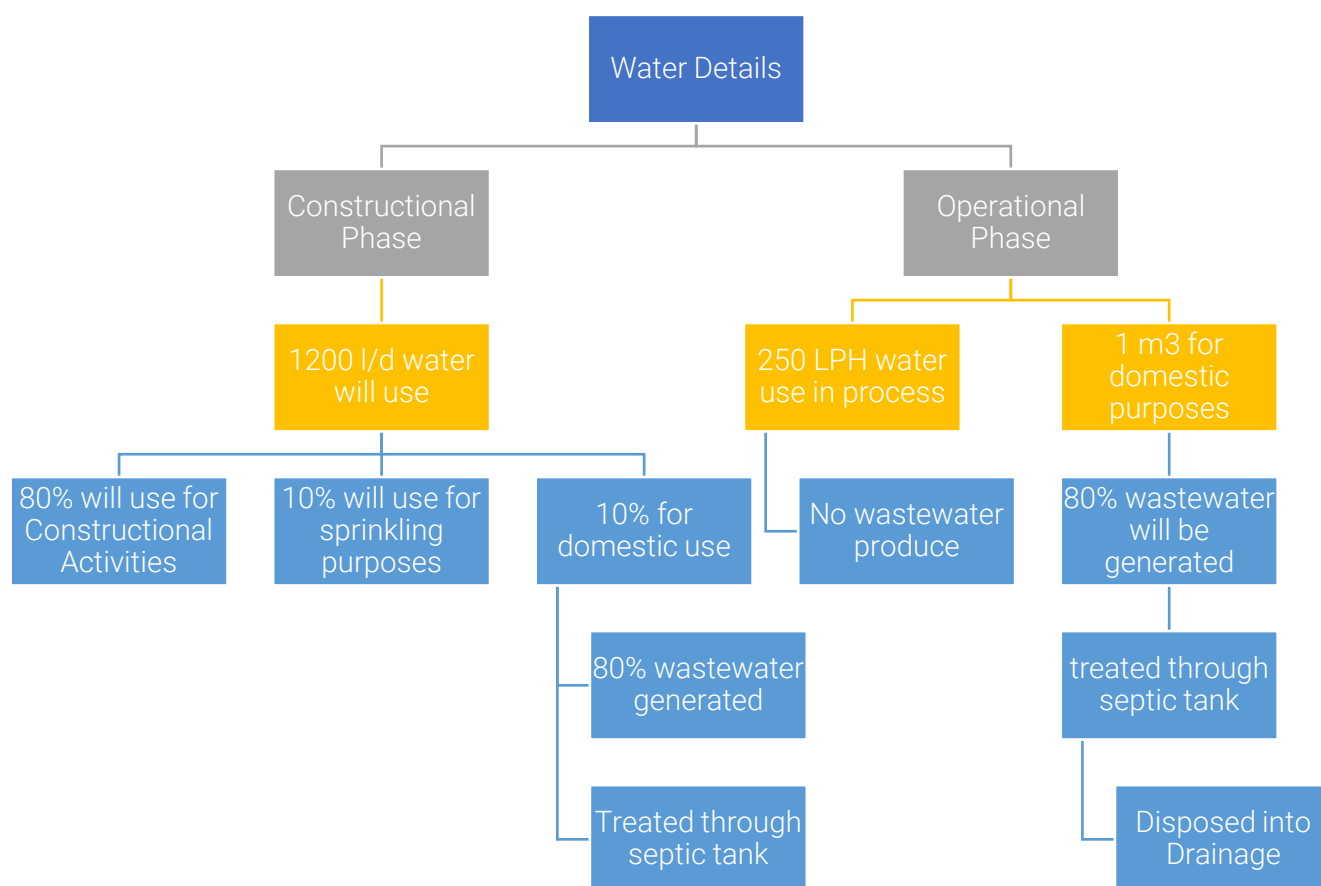


Figure 12: Water Details

2.10 Solid Waste:

In constructional phase all waste materials such as landscape and land clearing debris, gravel and aggregate products, concrete, masonry scrap and rubble (brick, concrete masonry, stone),

and plastics and paper from cement bags will be recycled during the construction activities as road filling and maintenance purposes. Solid waste by domestic sources will be generated during construction phase which will be placed in separate bins.

In operational phase, according to an estimate, approx. 10 kg/day domestic and project related solid waste will be produced during the operation phase of the project.

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

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

2.11 Noise & Vibration

Generation of noise during constructional phase will be due to construction and installation of machineries. During the operational phase, there will be generation of noise due to operation of loading equipment and other vehicular movements. All these sources will generate continuous noise. However, the noise transmission outside the plant boundary will be below because most of the noise generating equipment will be kept in closed structures. Acoustic systems will be provided to D.G set. However, D.G set will be treated as standby and usage would be very less in emergency or during the power failure only. The workers will also be provided with earmuff, earplug while working at noisy area.

2.12 Health And Safety

A well maintained health and safety plan will be established. It will assure the contractor will maintain all the safety measures in construction. Mainly ear muffs and helmets will be provided at the time of operation. In operation no activity is involved because 98% system is automated. Beside this safety mats, shoes, gloves all will be part of the work's dress.

Table 7: Details of PPEs

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

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

2.13 Plantation

Area for plantation was reserved. There is lot of native plant at three sides of the plant. Proper plantation done to control the suffocation and for the esthetic purpose. The plantation Plan is annexed in **Annexure-H**.

2.14 Labor Requirements

Labor requirements during construction will peak at approximately 500 laborers over the 12-month construction period. It is recognized that Pakistan has a good supply of qualified trades people, engineers, architects, and other experienced construction and project management personnel. Every attempt will be made to recruit qualified local personnel wherever practical to do so. The construction labor will be accommodated in nearby settlements or newly constructed housing.

It is anticipated that the routine operation and maintenance of the plant will require an estimated work force of 150 people. The work force will consist of administrators and supervisors, plant operators, mechanics and maintenance crews, security and service personnel.

The majority of the employees are expected to be Pakistani citizens with some upper management, administrative and specialized engineering positions being filled by expatriate personnel.

2.15 Restoration And Rehabilitation Plans:

All possible precautions will be taken to prevent an untoward incident in terms of life and property losses. On completion of the project, solid waste will be removed from the site in order to maintain aesthetics of the area. All measures will be undertaken for ensuring occupational safety, security and clean environment during the working hours. Vegetation and landscaping will be done by the proponent after the completion of project.

2.15.1 Details Of Restoration And Rehabilitation At The End Of The Project Life:

There will be no matter of rehabilitation as the proposed site is already owned by the project proponent. At the end of the life of the project, it will be duly dismantled with special precautions to avoid/ minimize pollution and at the same time taking all safety precautions to protect human life and property around the building.

Debris or any other wastes resulting from demolishing of the building will be disposed off in environmentally sustainable fashion. The materials capable of recycling/reuse will be either sold in the market or to be reused for other suitable purposes. While dismantling the building all Government rules and regulations are applicable to such activities will be strictly adhered to.

2.16 Government Approvals:

The proponent is very purposive about the approval from all local and government bodies but NOC from EPA is prerequisite for approval from all these bodies. Government Approvals upto this stage are annexed in **Annexure-D**.

3 CHAPTER 3: ANALYSIS OF ALTERNATIVES

3.1 Introduction

The various industrial activities have potential to harm environment, so it is necessary to control adverse impact or minimize the impact at the designing stage and technology alternatives, which will reduce all over impacts on environment and society.

Analysis of Alternative is the process of analyzing the proposed locating for suitability for basic necessities to operate the plant safely, this analysis also covers the environmental aspect of pollution prevention, and improvement in quality of life nearby the project vicinity.

The project alternative is the course of action in place of another, that would meet the same purpose and need but which would avoid or minimize negative impacts and enhance project benefits. Such projects may result in specific impacts which can be avoided or mitigated by adherence to certain predetermined performance standards, guidelines or design criteria. Alternative approaches may therefore be more effective in integrating environmental and social concerns into the project planning process.

3.2 The “No Action” Alternative

A zero-alternative entail maintaining existing use to which the proposed project site has previously been put to. This alternative would eventually evade any short-term potential negative impacts from project execution. To this end, any potential positive impacts envisaged during midterm and long-term project implementation will be missed.

The “No-Action” Alternative (not constructing the facility) is not a feasible alternative, as it would lead to loss of investment of around 38 million rupee as well as expected employment of approximately 150 Pakistani staff (during operations) for 25 years. The project would produce 1,680,000 pieces of different products per year.

The “No-Action” Alternative would also result in loss of export opportunities of goods manufactured in Pakistan. From an environmental perspective, the proposed facility is to be constructed in a designated Industrial Zone. Should the “No-Action” Alternative be selected, the proposed project location would remain designated for other industrial activity.

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.

3.3 Location 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.

3.4 Rejected Sites

Before the consideration of selected project site, project proponent had considered another site. Site-1 in the Her Do Gher, but later it was rejected due to high cost of land and less benefits of project site. Another site, Site-2 was considered for the construction of the subject project by the management but it was also rejected due to some reasons.

3.5 Reason For Rejection

This site was rejected due to the following reasons:

- Dense vegetation/ tree cutting issue
- Cost of land
- Lack of road infrastructure
- There was no facilities or benefits like industrial estate
- There was no proper drainage of wastewater was available
- Area of available land was low

Aerial views of the site are given below.



Figure 13: Site Alternative - 1

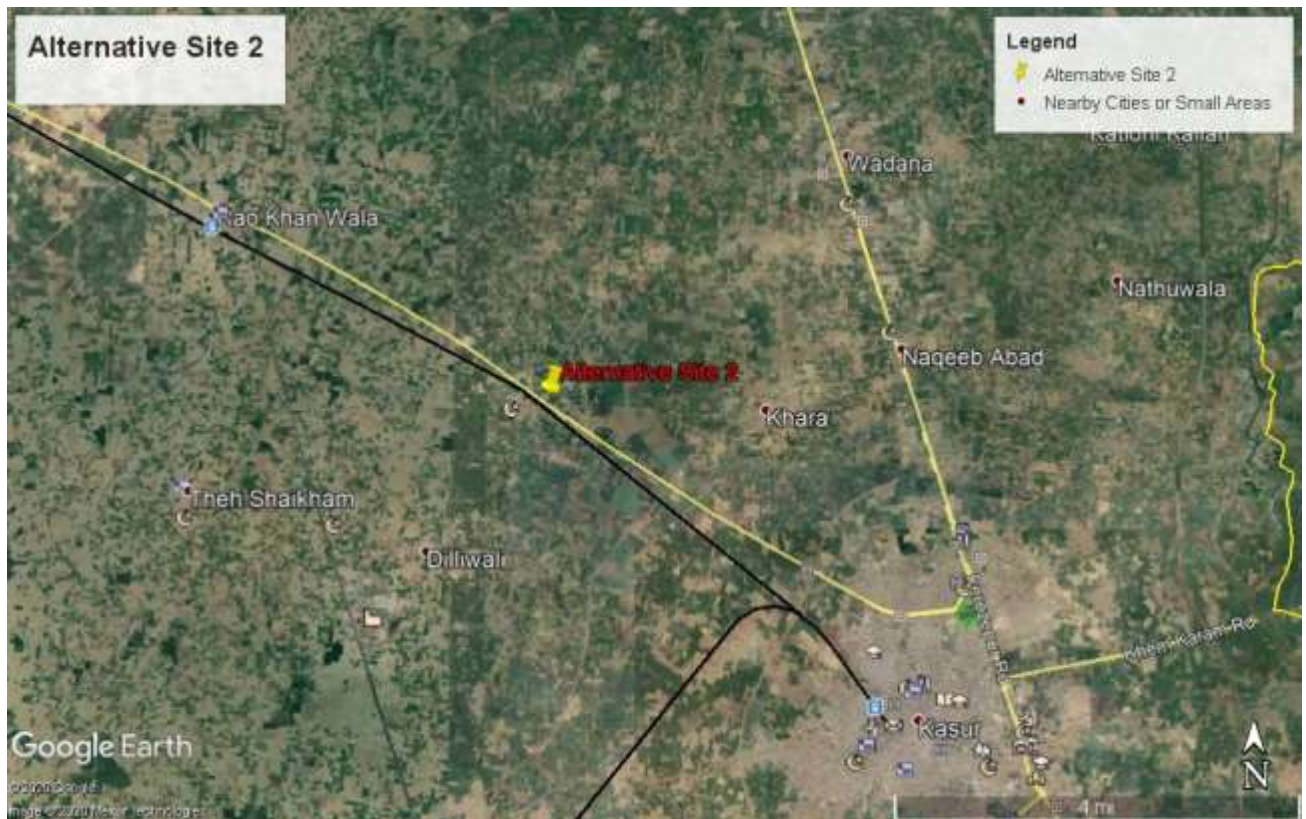


Figure 14: Site Alternative – 2

3.6 Modified Construction Technology Alternatives

The proposed development will be constructed using modern, locally and internationally accepted technology and materials to achieve public health, safety, security and environmental aesthetic requirements. Equipment that saves energy and water will be given first priority without compromising on cost or availability factors. The concrete pillars and walls will be made using locally sourced stones, cement, sand (washed and clean), metal bars and fittings that meet the quality standards requirements.

3.7 Technology Alternatives

There are local machinery available that is not environmental friendly and also not brand new. The company intent to import brand new machinery from renowned manufacturers from China and European countries. Final design of Plant and Machinery will base on latest available technology to produce high quality pharmaceuticals. These machines have pollution remove technologies built in. Therefore, it the best option to use that technology.

4 CHAPTER 4: ENVIRONMENTAL & SOCIAL BASELINE CONDITIONS

4.1 Introduction

Baseline conditions refer to the existing physical, environmental and socio-economic status of the Project area. The baseline information and indigenous knowledge is required for scoping potential environmental issues associated with the implementation of the Project. On the basis of baseline information, the Project interventions are assessed and mitigation measures are proposed. The baseline data (physical, biological and socio-economic parameters) related to the Project area is described below. Information provided is based on primary and secondary data collected by site visits and desk studies respectively.

4.2 Physical Environment

4.2.1 Topography & Geography

The proposed site is situated at Sundar Industrial Estate. Site area is generally flat and slopes towards south and south-west at an average gradient of 1:3000. The project area is surrounded by industrial units and within the radius of 10 Km, there is Jamal Pura, Wara Kumharan, Rosa, Riwiand City and small villages / towns etc.

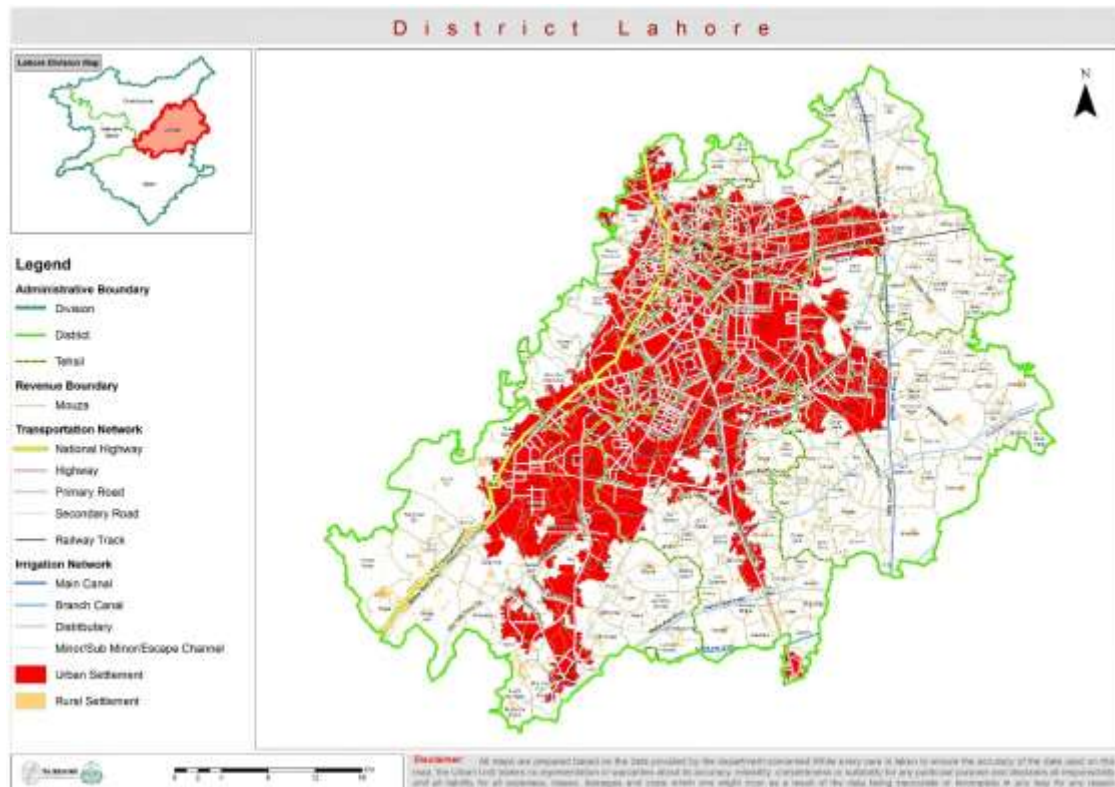


Figure 15: Map of Lahore District

4.2.2 Soil

The selected project land is w.r.t fertility is poor fertile land. In the vicinity, the fertile agricultural land can be seen. The soil of surrounded area is loamy in nature. Site selected for the construction of sack paper bag manufacturing is dominated in sand (sandy loam).

4.2.3 Temperature & Precipitation

Temperature & precipitation pattern can be estimated from the below figure simulated on the base of 30 year of hourly weather data collected from Pakistan Metrological Department (PMD). The simulated weather data have a spatial resolution of approximately 30 km and may not reproduce all local weather effects, such as thunderstorms, local winds, or tornadoes. Climatic changes are being significant factor to change the expected temperature & precipitation pattern in the proposed project area of Dist. Lahore.

The given below Figure shows the precipitation diagram for Dist. Lahore on how many days per month, certain precipitation amount is reached. The proposed project area has maximum rainfall in July & August and dry season from October to December. In tropical and monsoon climate, the amounts may be underestimated.

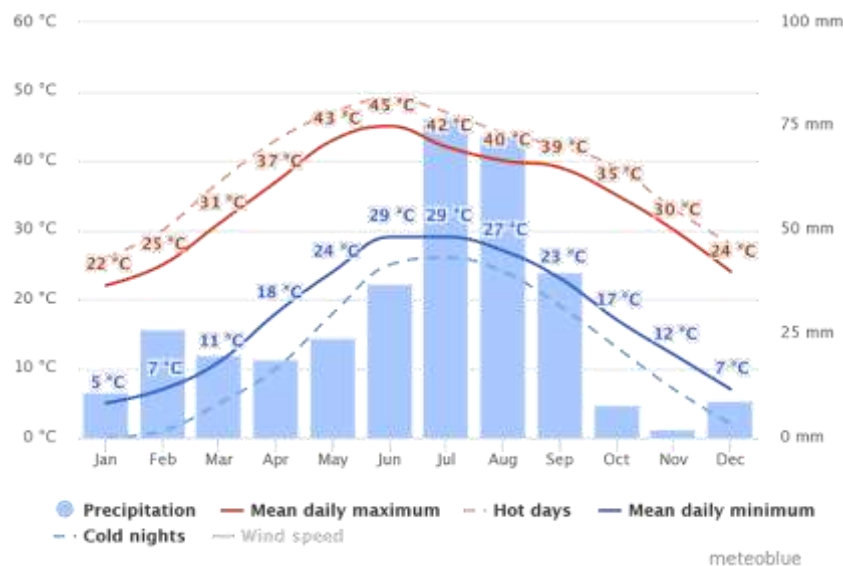


Figure 16: Average Temperature & Precipitation Data of Project Site

4.2.4 Wind Speed & Direction

Wind speed and its direction can be estimated from the figure given below. The data is simulated on base of 30 years' hourly weather condition data collected by Pakistan Metrological Department (PMD). Mostly, greater than 5 Km/h winds below in area of proposed project site and its direction toward East – North East side. Greater than 12 Km/h wind below mostly towards East – South East direction.

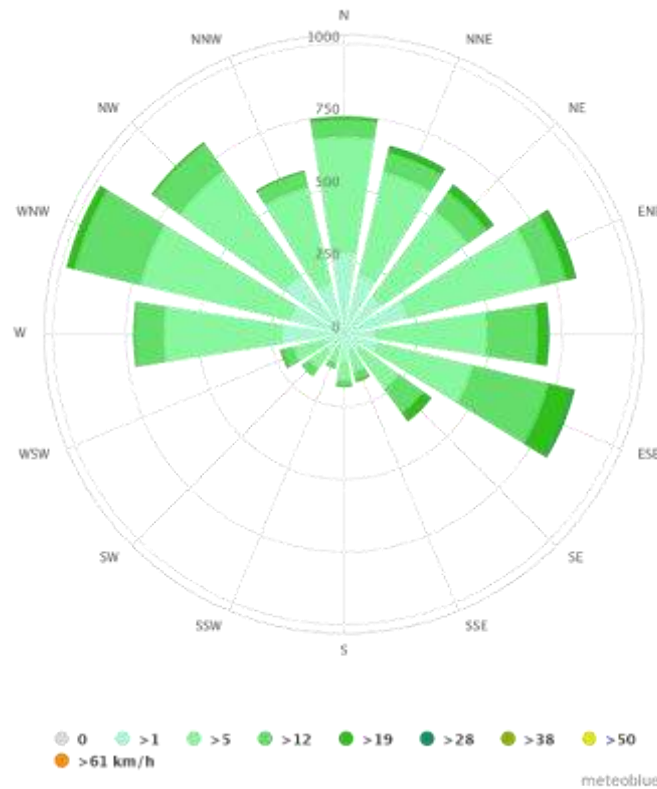


Figure 17: Wind Rose of Project Site

4.2.5 Surface Water

No clear water canal, stream or river is passing within 10 – 15 Km range of proposed project site. A wastewater receiving drain (Rohi Nalah) is passing on East side of proposed project site at approx. 1000 m away. It receives wastewater from all nearby industries.

4.2.6 Underground Water

Underground water resource use nearby project area industries and houses. The underground water is clear, healthy and can be used as drinking purpose also. Pumps, tube wells and hand pumps are used to extract the water from ground. Water table is present at the depth of 70 feet but is not fit for drinking purpose due to contamination. Drinking water can be extracted from the depth of 600- 800 ft from ground. Water Quality test report are annexed in **Annexure – G**.

4.2.7 Ambient Air

The proposed project site is surrounded by industrial estate and number of small industries within 10-Km radius. The major sources of air pollution in the area are surrounding industries and transportation or vehicular traffic.

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 PM10) in the air. Ambient Air Quality test report is annexed in **Annexure – G**.

4.3 Ecological Environment

4.3.1 Fisheries

The area where site is situated for project, don't have any lake, river or pound. Therefore, this aspect of environment is out of question for this project.

4.3.2 Flora

The project site has very few trees i.e. keekar (Acacia arabiana), Sheesham (Dilbarjia sisso), Shehtot (Morus alba), Bair (Ziziphus mauritiana), Sufaidah (Eucalyptus) and Weeds include parthinium, Akk and meskits species are present at the site.



Figure 18: Ecological Survey of Area

4.3.3 Fauna

There are number of locally available birds, reptiles and mammals are present in the project area but there is no protected species.

Table 8: Details of Fauna

Sr. No.	Name of Specie	Local Name
1.	<i>Bubalus bubalis</i>	Buffalos
2.	<i>Bos taurus</i>	Cows
3.	<i>Canis lupus</i>	Dog
4.	<i>Passer domesticus</i>	House Sparrow
5.	<i>Corvus</i>	Crow
6.	<i>Columbidae</i>	Pigeon
7.	<i>Thanasimus formicarius</i>	Beetle ant

8.	<i>Sympetrum flaveolum</i>	Dragon fly
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4.4 Socioeconomic Environment:

"The socioeconomic environment is one the component of the regional ecosystem." The development projects can impact either negatively or positively to the regional socio-economic environment.

The socioeconomic environment is one the component of the regional ecosystem." The development projects can impact either negatively or positively to the regional socio-economic environment.

4.4.1 Demography

4.4.1.1 Population

The results of the 2017 Census determined the population to be at 11,126,285 with an annual growth rate of 4.07% since 1998. Gender-wise, 52.35% of the population is male, while 47.64% is female and trans genders make only 0.01% of the population.

4.4.1.2 Religion

The city has a Muslim majority and Christian minority population. There is also a small but longstanding Zoroastrian community. Additionally, Lahore contains some of Sikhism's holiest sites, and is a major Sikh pilgrimage site. According to the 1998 census, 94% of Lahore's population is Muslim, up from 60% in 1941. Other religions include Christians (5.80% of the total population, though they form around 9.0% of the rural population) and small numbers of Bahá'ís, Hindus, Ahmediya, Parsis and Sikhs.

4.4.1.3 Education

Lahore is known as Pakistan's educational capital with more colleges and universities than any other city in Pakistan. Lahore is Pakistan's largest producer of professionals in the fields of science, technology, IT, engineering, medicine, nuclear sciences, pharmacology, telecommunication, biotechnology and microelectronics, nanotechnology and the only future hyper high-tech centre of Pakistan. 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:

- St. Francis High School, established in 1842
- King Edward Medical University, established in 1860
- Forman Christian College, established in 1864
- Government College University, Lahore, established in 1864
- Convent of Jesus and Mary, established in 1867
- University Law College, established in 1868
- National College of Arts, established in 1875
- University of the Punjab, established in 1882[123]
- University of Veterinary and Animal Sciences, established in 1882
- Central Model School, established in 1883

- Aitchison College, established in 1886
- Islamia College, established in 1892
- St. Anthony's High School, established in 1892
- Sacred Heart High School, established in 1906
- Queen Mary College, established in 1908
- Dayal Singh College, established 1910
- Kinnaird College for Women University, established in 1913
- University of Engineering and Technology, Lahore, established in 1921
- Lahore College for Women University, established in 1922
- Hailey College of Commerce, established in 1927
- De'Montmorency College of Dentistry, established in 1929
- Lady Willingdon Nursing School, established in 1933
- University College of Pharmacy, established in 1944
- Fatima Jinnah Medical University, established in 1948

4.4.1.4 Culture & Festival

The people of Lahore celebrate many festivals and events throughout the year, blending Mughal, Western, and other traditions. Eid ul-Fitr and Eid ul-Adha are celebrated. Many people decorate their houses and light candles to illuminate the streets and houses during public holidays; roads and businesses may be lit for days. The mausoleum of Ali Hujwiri, also known as Data Ganj Bakhsh or Data Sahib, is located in Lahore, and an annual urs is held every year as a big festival. Basant is a Punjabi festival marking the coming of spring.

Basant celebrations in Pakistan are centred in Lahore, and people from all over the country and from abroad come to the city for the annual festivities. Kite-flying competitions traditionally take place on city rooftops during Basant. Courts have banned the kite-flying because of casualties and power installation losses. The ban was lifted for two days in 2007, then immediately reimposed when 11 people were killed by celebratory gunfire, sharp kite-strings, electrocution, and falls related to the competition

4.4.1.5 Recreational Resources And Development:

The project area has not any private recreational facilities.

4.4.1.6 Quality Of Life Values

As of 2008, the city's gross domestic product (GDP) by purchasing power parity (PPP) was estimated at \$40 billion with a projected average growth rate of 5.6 percent. This is at par with Pakistan's economic hub, Karachi, with Lahore (having half the population) fostering an economy that is 51% of the size of Karachi's (\$78 billion in 2008). The contribution of Lahore to the national economy is estimated to be 13.2%. Lahore is one of the Pakistan's modern city.

4.4.1.7 Archaeological And Historical Treasures

Project site is free from any type of historical and archaeological site/building.

5 CHAPTER 6: POTENTIAL ENVIRONMENTAL IMPACTS & MITIGATION MEASURES

5.1 Introduction

The following chapter describes the overall possible impacts of project on the physical, biological and socioeconomic environment because of operation phases and mitigation measures to minimize the significance of the possible impacts up to an acceptable level. The anticipated impacts related to location, design, construction and operation of the proposed project have been assessed and mitigation measures have been suggested in this report.

Impacts are assessed by analyzing their magnitude and sensitivity. The sensitivity and magnitude of the impact are described with reference to legal requirements, accepted scientific standards or accepted impact assessment practice, and/or social acceptability; where possible.

5.2 Methodology For Impact Evaluation:

The methodology adopted for impact evaluation includes the Modified Leopold Matrix.

5.2.1 Leopold Matrix

The analysis is performed with the Leopold Matrix (LM). This matrix has:

- On the horizontal axis, the actions which cause environmental impact, and
- On the vertical axis, the existing environmental conditions which may be affected by those actions.

This provides a format for comprehensive review of the interactions between proposed actions and environmental factors.

The most important blocks marked are evaluated individually, and a number between 1 and 10 is placed in the upper left-hand corner to indicate the relative magnitude of the impact (1 represents the least magnitude, and 10 the greatest). Likewise, a number between 1 and 10 is placed in the lower right-hand corner to indicate the relative importance of the impact (again, 1 represents the least magnitude and 10 the greatest).

Table 9: Scale Table of Importance & Magnitude

Sr. No.	Type of Impact	Scale of Magnitude (0 – 10)	Scale of Importance (0 – 10)
1	No Impact	0	0
2	Low Impact	1 – 4	1 – 4
3	Medium Impact	5 – 6	5 – 6
4	High Impact	7 – 10	7 – 10

Table 10: Leopold Matrix

Construction & Operational Phase															
Magnitude Importance			Actions											Total Score of Impact	Average Score of Impact
			Transportation of raw material	Construction Activities	Operation of generators	Water consumption	Wastewater generation	Storage of raw materials	Social activities	Public welfare	Economic activities	Employment	Infrastructure improvement		
PHYSICAL	Soil	Soil Quality	2 1	3 2	0 0	1 1	5 2	4 4	1 1	0 1	1 1	1 3	4 6	22 22	2 2
		Erosion	2 1	6 6	0 0	0 0	2 2	1 1	2 1	0 0	1 1	1 1	3 4	18 17	1.6 1.5
		Geomorphology	0 0	5 5	0 0	4 2	5 3	2 1	0 0	0 0	1 1	2 1	4 6	23 19	2.09 1.7
	Water	Surface Water	0 0	0 0	0 0	6 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	6 0	0.5 0
		Subsurface Water	1 2	1 1	0 0	7 8	5 7	1 1	0 0	0 0	1 1	0 0	2 2	18 22	1.6 2
	Air	Air Quality	2 1	6 6	0 0	0 0	2 2	1 1	2 1	0 0	1 1	1 1	3 4	18 17	1.6 1.5
		Odors	1 1	1 1	3 3	0 0	5 7	4 6	1 1	0 1	0 1	1 1	1 1	17 23	1.5 2.0

		Noise	5 6	9 10	7 8	0 0	5 4	2 2	5 0	0 1	5 6	4 6	4 6	46 55	4.1 5
BIOLOGICAL	Fauna & Flora	Crops	2 2	5 6	3 2	0 0	4 6	2 2	2 3	4 3	5 7	3 3	3 3	33 37	3 3.3
		Birds	2 2	7 7	5 5	2 1	4 4	1 1	5 4	0 0	5 5	3 4	4 4	34 37	3.4 3.3
		Mammals	5 4	6 7	2 2	2 1	4 3	2 1	3 3	0 0	4 3	3 4	3 3	34 31	3.3 2.8
SOCIO-ECONOMIC	Social	Industrial	5 6	7 7	5 5	4 6	6 7	4 5	6 6	5 6	8 8	9 9	7 7	66 72	6 6.5
		Recreational Use	2 3	3 4	2 3	3 3	3 3	1 1	3 4	4 5	4 5	2 1	4 3	31 35	2.8 3.1
		Historical / Cultural	2 2	7 7	2 2	2 1	4 4	1 1	5 4	4 4	5 5	3 4	4 4	39 38	3.5 3.4

5.3 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:

5.3.1 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.

5.3.2 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 identify 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 proposed 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.

5.4 Characteristics Of Impacts:

5.4.1 Impact Evaluation

The following steps in the EIA have been accomplished so far:

- Identification of project aspects;
- Identification of Valued Ecosystem Components (VECs); and,
- Determination of the potential environmental impact of each of the aspects on each VEC.

The next stage is to evaluate the significance of each potential environmental impact on each VEC. Impacts are evaluated using the following criteria:

- Character of the VEC;
- Duration of the impact;
- Magnitude of the impact;
- Spatial extent;
- Type (direct, indirect, cumulative); and,
- Probability of occurrence.

Definitions of the above parameters are given in below Table:

Table 11: Assessment of Impact Significance

<u>Duration</u> – what is the length of the negative impact?	
None	no effect.
Short	less than one year.
Moderate	one to ten years.
Long	greater than ten years.
Permanent	irreversible
<u>Magnitude</u> – what is the effect on the resource within the study area?	
None	no effect.
Small	affecting less than 1% of the resource.
Moderate	affecting 1-10% of the resource.
Great	affecting greater than 10% of the resource.
<u>Spatial Extent</u> – what is the scale of the impact in terms of area, considering cumulative impacts and international importance?	
Local	in the immediate area of the impact.
Regional/National	having large-scale impacts.
International	having international importance
<u>Type</u> – what is the impact?	
Direct	caused by the project and occur simultaneously with project activities
Indirect	associated with the project and may occur at a later time or wider area
Cumulative	combined effects of the project with other existing /planned activities
<u>Probability</u> – what is the likelihood of an impact occurring?	
Low	<25%
Medium	25-75%
High	>75%

Consideration of the above criteria leads to the definition of a significance for each potential environmental impact / VEC combination. Six significance classes have been defined, as outlined in Table below:

Class	Significance	Description/Comments
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1.	Significant, Major impact	Impacts are expected to be permanent and nonreversible on a national scale and/or have international significance or result in a legislative noncompliance.
2.	Significant, Moderate impact	Impacts are long term, but reversible and/or have regional significance.
3.	Insignificant, Minor impact	Impacts are considered to be short term, reversible and/or localized in extent.
4.	Insignificant	No impact is expected.
5.	Unknown	There are insufficient data on which to assess significance.
6.	Positive	Impacts are beneficial to the key VECs.

5.4.2 Impact Assessment Criteria:

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

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

Table 12: Impact Assessment criteria

Rating of Consequence of Effect on Environment	Rating of Frequency of Occurrence				
	A. Very low: Not heard of but could occur	B. Low: Has occurred in other industry	C. Medium Has occurred in oil and gas industry	D. High: Occurs several times a year in oil and gas industry	E. Very high: Occurs several times a year in PDO
Slight effect: Local environmental damage. Within the fence and within systems. Negligible financial consequences	LOW RISK				
Minor effect: Contamination. Damage sufficiently large to attack the environment. Single exceedence of statutory or prescribed criterion. Single complaint. No permanent effect on the environment.		MEDIUM RISK			
Localized effect: Limited loss of discharges of known toxicity. Repeated exceedence of statutory or prescribed limit. Affecting neighborhood.					
Major effect: Severe environmental damage. The company is required to take extensive measures to restore the contaminated environment to its original state. Extended exceedence of statutory limits		HIGH RISK			
Massive effect: Persistent severe environmental damage or severe nuisance or nature conservancy extending over a large area. In terms of commercial or recreational use, a major economic loss for the company. Constant, high exceedence of statutory or prescribed limits				EXTREME RISK	

5.5 Analysis Of Impacts And Recommended Mitigations

5.5.1 Environmental Impacts Due To Project Location:

The proponent aims to a establishing a manufacturing plant for production of pharmaceuticals. 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 to moderate

Nature of impact: Direct

Duration: Long-term

Timing: Construction & Operation phase

Reversibility: NA

Likelihood: Low

Consequences: Mild or may be positive

Mitigation Measures

- Project site will have good and efficient road infrastructure that already exists there at the project site
- Location can be considered as the positive impacts due to enhanced infrastructure.
- The project will also have positive socioeconomic impacts because of provision of jobs to the local residents of the area.
- No human settlement within the radius of the study area
- There would be no issue of congestion of traffic due to presence of good road network in the area.
- Provision of embankments, designed by considering the Geotechnical investigation studies. Due consideration should be given to aesthetic improvement during the design phase.

5.5.2 Environmental Impacts Due To The Project Design

The current project is land development. Area for parking, waste water treatment facility and solid waste management will be reserved within unit. Firefighting plan, health & safety plan, tree plantation plan, emergency response plan will be incorporated during the design phase of the project.

Following are the major Environmental impacts due to the development related to the design:

- Low utilization of available space
- Soil structure and soil bearing capacity
- Improper road infrastructure design
- Emergency exit in the proposed project
- Firefighting system
- Wastewater disposal system design
- Rain water harvesting capacity of the drainage system

- Electricity hazards
- Low social acceptability & functionality of design

Impact significance: moderate to high

Nature of impact: direct

Duration: Long-term

Timing: Constructional phase & Operation phase

Reversibility: NA

Likelihood: moderate to high

Consequences: moderate to high

Mitigation measures and recommendations

Following are the mitigation measures and recommendations to minimize the anticipated impacts:

- Each industrial unit will incorporate all HSE measures regarding the design of project.
- Structure stability of the building should be ensured.
- Emergency exist points should be marked within the project building and in overall plan.
- Firefighting system should be designed for the emergency situations.
- Electricity system should be design safe and sound.
- Electricity wires should be covered by thick plastic/electricity resistant covers.
- Design should be professional which accommodate the maximum space and has high social acceptability & functionality.

5.5.3 Environmental Impacts During Construction Phase:

5.5.3.1 Impacts On Physical Environment

5.5.3.1.1 Topography

Project has plan land and some digs. In the proposed area there are little trees and excavation and leveling is involved in this construction.

Impact:

- Change in topography due to excavation
- Land filling of the area
- Construction of roads

Impact significance: Low

Nature of impact: Direct

Duration: Short-term

Timing: Constructional phase

Reversibility: NA

Likelihood: moderate

Consequences: Very Low

Mitigation:

- Cuttings of trees will be avoided

- Use of existing paved tracks as many as possible.
- Working should be in such a way that minimum excavation is involved

5.5.3.1.2 Air Quality:

Air quality will be affected by fugitive dust emissions from construction machinery; dust from the unpaved surface and construction vehicles. The critical sources of dust pollution during the construction phase will be

- Unpaved road surface
- Transportation of materials and other construction activities that create dust emissions

Impact significance: Low

Nature of impact: Direct

Duration: Short-term

Timing: Constructional phase

Reversibility: NA

Likelihood: moderate

Consequences: Very Low

Impact:

Air quality deterioration, particulate matter/dust emissions due to construction activities; stand by generator, equipment's and vehicle.

Mitigation:

- Sprinkling of water on track will reduce dust pollution
- Provision of dust masks for workers.
- Air quality monitoring is recommended on regular base
- Proper paved road infrastructure is recommended
- All vehicles, machinery, equipment and generators used during construction activities should be kept in good working condition and be properly tuned and maintained in order to minimize the exhaust emissions
- Blowing of dust and particulate matter from stockpiled loose materials (e.g. sand, soil) should be avoided either by sheeting them with tarpaulin or plastic sheets or by sprinkling them with light shower of water
- Open burning of solid waste from the Contractor's should be strictly banned;

5.5.3.1.3 Noise

Noise is a by-product of human activity, and area of exposure increases as function of mobility and construction activities. Sources of noise during construction are heavy machinery such as bulldozers, excavators, stabilizers and other equipment. Noise generated by construction machinery is likely to affect sensitive receptors located within 50 meter of the proposed Project.

Impact

- Persistently higher noise levels can produce psychological effects of distraction of attention, irritation and short temperedness in the exposed persons

- Noisy settings and higher background levels can cause temporary threshold shift and the consequent habit of speaking loud, which may cause damage to vocal cords in the persons exposed
- Noise produced from moving construction vehicles and blowing of pressure horns, at times, could be intolerable particularly during quiet hours of night

Impact significance: Low

Nature of impact: Direct

Duration: Short-term

Timing: Constructional phase

Reversibility: NA

Likelihood: moderate

Consequences: Low

Mitigation:

- Selection of up-to-date and well-maintained plant or equipment with reduced noise levels ensured by suitable in-built damping techniques or appropriate muffling devices
- Confining excessively noisy work to normal working hours in the day, as far as possible
- Providing the construction workers with suitable hearing protection like ear cap, or earmuffs and training them in their use
- Preferably, restricting construction vehicles movement during night time
- Vehicles and equipment used should be fitted, as applicable, with silencers and properly maintained
- Use of low noise machinery, or machinery with noise shielding and absorption
- Contractors should comply with submitted work schedule, keeping noisy operations away from sensitive points; implement regular maintenance and repairs; and employ strict implementation of operation procedures

5.5.3.1.4 Water Resources

There is no impact on surface water quality during the construction of the project area. Persistent and prolonged withdrawal of groundwater higher than the safe yield limits of the aquifer can initiate early depletion of aquifer. This situation can result in reduced water supplies for other users who share the same groundwater resource. Abstraction of the groundwater over and above the safe yield limit can produce serious hydrological and environmental consequences.

Impact:

- Early depletion of the aquifer resources
- Persistent lowering of the water table
- Reduced availability or non-availability of the groundwater to the neighboring communities sharing the same aquifer
- These impacts are temporary and minor negative in nature

Impact significance: Low

Nature of impact: Direct

Duration: Short-term

Timing: Constructional phase

Reversibility: NA
Likelihood: moderate
Consequences: Low

Mitigation:

- Water required for construction is obtained in such a way that the water availability and supply to nearby communities remain unaffected
- Regular water quality monitoring according to determined sampling schedule
- Prohibit washing of machinery and vehicles in surface waters, provide sealed washing basins and collect wastewater in sedimentation/retention pond
- Continuous withdrawal and over pumping of groundwater should be avoided. Instead, intermittent pumping be carried out to conserve the groundwater resources
- Take precautions construct temporary or permanent devices to prevent water pollution due to increased siltation

5.5.3.1.5 Soil

The project area is open land with no paved area. Soil erosion and contamination may occur on site due to the following likely impacts:

Impact:

- Excavation of earth/cutting operations
- Land leveling activities
- If the excavated area is left unfilled for long, which may lead to rainfall induced soil erosion;
- The unspent materials and debris produced from consumed up materials, if left as such and allowed to mix with soil underneath, can degrade the quality of receiving soils and may render them unfit for plantation later on
- Leakages of oils, lubricants, chemicals, and other similar substances from their storage sites and from engines of the generators, machines, equipment and vehicles can spoil the receiving soils and may undermine ability of the spoiled soils to support growth of vegetation and plants
- Non-provision of septic tanks with the temporary worksite toilets, constructed for the labour and others, can contaminate the effluent receiving soils because of raw nature of the effluents
- Washing of the gadgets, machinery and equipment without proper drainage of the washout water can adversely affect the soil quality. This impact is, however, temporary.

Impact significance: Low to Moderate
Nature of impact: Direct
Duration: Short-term
Timing: Constructional phase
Reversibility: NA
Likelihood: moderate
Consequences: Low

Mitigation:

- Non-bituminous wastes from construction activities will be dumped in approved sites, in line with the legal prescriptions for dumpsites, and covered
- As applicable and needed, plantation of grasses and shrubs will be done at appropriate place where required
- Unnecessary excavations should be avoided
- Oils, lubricants, chemicals, and other listed hazardous materials should be stored safely at their designated spots, enclosures or store rooms, which should be safe from rainfall and away from any potential source of fire
- Septic tanks of adequate capacities should be constructed for receiving and treating wastewater from all temporary worksite toilets and at the temporary container offices, if any. The toilet wastewater should not be discharged untreated onto the adjacent lands
- All machineries and materials should be stored at the designated areas and compounds
- All the unspent and left over materials should be completely removed offsite upon completion of construction
- Washout from washing of equipment and gadgets should be drained into either a septic tank or a sand-gravel bed for removal of the grit and contaminants

5.5.3.1.6 Wastewater

Impact:

- Wastewater generation due to construction activities

Mitigation:

- Wastewater generated during construction and domestic activities will be stored temporarily in septic systems comprising of septic tanks from where it will be routed to local drain present near the project.
- Waste segregation measures will be employed to minimize entry of solid waste into the wastewater stream.
- An appropriately designed septic tank will be used to treat sewage/waste water to achieve PEQS.
- Periodic cleaning of the septic tank is recommended.

5.5.3.1.7 Solid Waste

Due to construction activities waste will be generated at construction and contractors camp site. The construction waste will include wastewater, oil spillage from machinery, domestic waste and solid waste etc. The handling and storage of oil, asphalt/bitumen may be a source of environmental pollution as a hazardous waste. This will result in unhygienic conditions, health risk to work force and public at the camp site.

Impact

- Insecure and unhygienic disposal of the solid wastes generated at the worksite, particularly garbage and trash may cause degradation of soil and land
- Insecurely disposed off heaps of wastes containing kitchen garbage and food waste can serve as breeding grounds for the disease spreading vectors and rodents
- Throwing away of solid wastes into water channels and the wastewater network can result into choking of the latter.

Impact significance: Low
Nature of impact: Direct
Duration: Short-term
Timing: Constructional phase
Reversibility: NA
Likelihood: moderate
Consequences: Moderate

Mitigation:

- An efficient and responsive solid waste management system should be devised for the entire duration of the construction phase. Such a system should provide for separate collection of different categories of constructional wastes. The wastes which will be reusable/recyclable (iron bars, aluminum) should be sold to waste vendors and those which cannot be sold out (brick pieces) may be used as a filling material for leveling the depressions, subject to technical feasibility
- Training of working force in the storage and handling of materials and chemicals that can potentially cause soil contamination
- Solid waste generated during construction and camp sites will be safely disposed in demarcated waste disposal sites or handed over to the contractor

5.5.3.1.8 Health and Safety

Health risks and work safety problems may result at the workplace if the working conditions provide unsafe and/or unfavorable working environment and due to storage, handling and transport of hazardous construction material. Workers should be provided with safe and healthy working environment taking into account risks inherent to the particular sector and specific classes of hazards in project area. Mitigation measures will include:

Impact significance: Low to Moderate
Nature of impact: Direct
Duration: Short-term
Timing: Constructional phase
Reversibility: NA
Likelihood: moderate
Consequences: Moderate

Mitigation:

- Providing basic medical training to specified work staff and basic medical service and supplies to workers
- Layout plan for site, indicating safety measures taken by the contractor, e.g. firefighting equipment, safe storage of hazardous material, first aid, security, fencing, and contingency measures in case of accidents
- Work safety measures and good workmanship practices are to be followed by the contractor to ensure no health risks for labourers
- Protection devices (ear muffs) should be provided to the workers doing job in the vicinity of high noise generating machines

- Provision of adequate sanitation, washing, cooking and dormitory facilities including light up to satisfaction
- Provision of protective clothing for laborers handling hazardous materials, e.g. helmet, adequate footwear for bituminous pavement works, protective goggles, gloves etc.
- Ensure strict use of wearing these protective clothing during work activities
- Instruct foremen to strictly enforce the keeping out of non-working persons, particularly children, off work sites
- Adequate signage, lightning devices, barriers, yellow tape and persons with flags during construction to manage traffic at construction sites, haulage and access roads.

5.5.3.2 Impact On Biological Environment

There is no any fauna or flora is present on the proposed project site. Few trees are there. On their behalf a complete plantation plan has been provided.

5.5.3.3 Impact On Socio-Economic Environment

5.5.3.3.1 Economic Activity

Due to the construction of the proposed Project, economic activity will be generated in the project area as the laborers and semi-skilled staff will have an opportunity to work for the construction of the proposed project. This will help in developing their skills and capacities. This is a moderate positive impact.

5.5.3.3.2 Lifestyle And Culture

There are chances of arising of issues related to cultural differences/conflict between the Contractor's workforce and the local inhabitants, conflicts arising due to the mix of local and migratory job seekers as the use of local resources and products will be increased. In this situation, local residents may resist contractor's workforce attitudes, cultural clashes particularly when local/international contractors are engaged, social disturbance and dissatisfaction with employing outsiders may arise. This impact is temporary and minor negative in nature.

5.5.4 Impacts During Operational Phase:

The positive and negative impacts of subject project, during its operation are discussed below:

5.5.4.1 Impacts On Physical Environments

5.5.4.1.1 Solid Waste/ Sludge Management:

In the operation of proposed project proper solid waste management system will be adopted for the prompt, timely and efficient disposal of solid waste & sludge for the reduction of its impacts. Impacts due to solid waste & sludge may be temporary and minor in nature.

Nature of impact: Direct

Duration: Short term

Timing: operation

Reversibility: Not applicable

Likelihood: Low (unlikely) if mitigation measures will ensure that Solid waste management in efficient way.

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:

- Devise plan & develop guidelines for the safe handling, storage & disposal;
- Sludge is placed at the site after cleaning of wastewater treatment facility;
- PPEs are strongly recommended for workers for the handling of sludge;
- Separate bins at various places must be present for solid waste collection and segregation;
- Waste will be handed over to EPA approved waste contractor;
- Solid waste will be recycling at maximum level;
- Industrial ecology practices will be implemented wherever possible;
- R's of sustainability is recommended;

5.5.4.1.2 Wastewater

Waste water will be produced only from domestic activities. In operation, no activity is place to used water and wastewater produced from it.

Nature of impact: Direct

Duration: Short term

Timing: operation

Reversibility: Not applicable

Likelihood: Low

Consequences: Mild

Impact significance: Low.

Mitigation measure

- Wastewater that is finally disposed off, will be in limits of PEQS
- Septic tank should be available.
- Water conservation approaches will be follow to reduce its wastewater
- Wastewater treatment facility will be installed to treat the wastewater

5.5.4.1.3 Gaseous Emissions:

Emissions will be produced by generators, boilers and vehicles and equipment will similar to those produced by generators in terms of the resulting pollutants (SO₂, NO_X, PM, etc.). However, the extent to which they can produce would keep considerably lower, since much smaller engines will use in vehicles and construction machinery.

Nature of impact: Direct

Duration: long term

Timing: operation

Reversibility: irreversible

Likelihood: moderate if mitigation measures will be ensured.

Consequences: moderate, if pollutant levels in the ambient air will be control within acceptable limits by adopting proper mitigations.

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

Mitigation Measures

None of the potential effects discussed above will be exceeded to acceptable limits. The mitigation measures given below used to reduce their impact, and ensure that they remain within acceptable limits.

- All equipment and vehicles during the operation of 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
- Speed limits will be imposed and encourage more efficient journey management worked to reduce the dust emissions produce by vehicular traffic. Water sprinkling will be done where necessary.
- Management make sure process will be environment friendly
- Pollution abatement technologies regarding air pollution will be adopted.
- For generators, small scrubbers will be install.

5.5.4.1.4 Energy Requirement

Energy consumption in industrial area is usually very high. Machinery work runs all day in different industries. Energy conservation technique should be in mind.

Mitigation measures

- Do not waste the energy/electricity when there is no need of it.
- Use energy efficient machinery and equipment
- Use energy saving products
- Conduct and maintain records for energy audits
- Do not leave the machinery in running form when there is no working being done
- Machinery must never be left unattended

It is recommended to save and conserve the energy and adopt energy efficient technologies during the construction phase

5.5.4.1.5 Noise Level:

Noise is the major concern during the operation phase. It can be generated from the traffic on the road and from the machinery used for operations.

Nature of impact: Direct

Duration: long term

Timing: operation

Reversibility: Not applicable

Likelihood: low

Consequences: slightly significant

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

Mitigation measures:

- Machinery and vehicles will be tuned and maintained
- Limits will impose on unnecessary use of horns
- Safety signs will be displayed. public & drivers will be aware of them
- Sound proof wall will be constructed for generator.

5.5.4.1.6 Health And Safety

Workers should be provided with safe and healthy working environment taking into account risks inherent to the particular sector and specific classes of hazards in area. Mitigation measures will include:

Impact significance: Low to Moderate

Nature of impact: Direct

Duration: Short-term

Timing: Operational phase

Reversibility: NA

Likelihood: moderate

Consequences: Moderate

Mitigation:

- Layout plan for site, indicating safety measures taken by the contractor, e.g. firefighting equipment, safe storage of hazardous material, first aid, security, fencing, and contingency measures in case of accidents
- Protection devices (ear muffs) should be provided to the workers doing job in the vicinity of high noise generating machines
- Provision of protective clothing for laborers handling hazardous materials, e.g. helmet, adequate footwear for bituminous pavement works, protective goggles, gloves etc.
- Ensure strict use of wearing these protective clothing during work activities
- Instruct foremen to strictly enforce the keeping out of non-working persons, particularly children, off work sites
- Adequate signage, lightning devices, barriers, yellow tape and persons with flags during construction to manage traffic at construction sites, haulage and access roads.

5.5.4.2 Impact On Biological Environment

5.5.4.2.1 Natural Vegetation

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

Assessment of Impact:

A significant impact can be caused due to the unnecessary or excessive removal and burning of plants for fuel wood.

Nature of impact: Direct

Duration: long term

Timing: construction phase

Reversibility: irreversible

Likelihood: moderate

Consequences: Mild, as no rare plant species were present in the areas.

Impact significance: significant

Mitigation Measures:

The following mitigation measures will reduce the impact on vegetation:

- Prohibition to park vehicles on green belts/ grass;
- Unnecessary damage to vegetation is strictly avoided;
- Proponent planted trees and other species after construction phase;
- Proponent will plant 10 trees if he removes a single plant during the construction/ development of the project.

5.5.4.2.2 Fauna

The fauna including wildlife specially endangered 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 animal species are present in the areas.

Impact significance: not significant

Mitigation:

- Maximum plantation is recommended
- Fauna will be preserved by different conservation strategies (in-situ and ex-situ), if any.

5.6 Potential Environmental Enhancement Measures

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

- Sprinkling of water will be done on dusty roads and tracks.
- PPEs will be provided during construction activity.
- Constructional waste and domestic solid waste will be disposed-off or utilized properly.
- Local people will be informed in advance when work is about to start in an area.
- Machinery will never be left unattended.
- Efforts should also be made to discuss traffic conditions so that regular traffic is not disturbed. Transporters engaged for the project would be forced to adhere to the load specifications of the access road. No overloading would be allowed in any case.
- Safety signs and boards will be placed during construction.
- Air pollution controlling devices will be installed within the project during operation.
- 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.
- Proper SOPs will be followed with proper schedule along with the HSE conditions.
- Area will be restored with native plants. A proper tree plantation plan will be formulated to save the environment.
- Solid waste will be handed over to contractors and agreement will 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.

5.7 Purpose Of Mitigation Measures

5.7.1 What is the problem i.e. In terms of "major environmental impacts" which may arise by the subject project activity?

The major impacts which may arise by the subject project are air, water and noise pollution. Other impacts are of minor importance. These impacts may arise during operational phase of the project because the constructional phase of the project includes the construction of boundary walls, roads and offices, so they will not cause any major harmful impacts on the environment and during the operational phase of the subject project, as different industries will be installed in the industrial estate, they may cause the issues of air, water and noise pollution if proper precautionary measures to avoid this pollution will not be taken but it will be ensured that precautionary measures will be adopted prior to start the activity, during the activity and post activity to cause minimum impacts to the environment.

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

Negative impacts may arise during the constructional and operational phase of the project if proper precautionary measures and procedures will not be followed. If proper precautionary measures and procedures will be implemented, there will not be any major problem. If any impact would arise due to the subject project activity, it 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 environmental friendly.

5.7.3 Where and how the problem should be addressed?

The problem should be address at the site and immediate response should be provided to address the problem which may arise. Institutional capacity responsible for the implementation of EMMP will be responsible for addressing such problems if arise.. They will assess any impact that could be arisen during both phases and they would also be responsible to address the problem and to mitigate it.

5.8 Whys Of Achieving Mitigation Measures

5.8.1 Changing in planning and design:

By adopting proper mitigation measures, any anticipated major or minor environmental impacts could be controlled or mitigated. The details of impacts and mitigation measures have been discussed in previous chapters.

5.8.2 Improved monitoring and management practices:

Management shall take appropriate measures to provide pollution free and safe environment during the proposed project activity by implementing improved management practices and monitoring techniques suggested in EMP.

5.8.3 Compensation in money terms:

Site proposed for the subject project is the property of the Government and free of any activity. As the site is the property of the government and vacant that's why there is no need of money in terms of land cost or any other mean. However, rehabilitation will be done in the vicinity of the project site to restore the beauty of the area.

5.8.4 Replacement, relocation and rehabilitation:

Subject project site is the property of the government, there is no need of replacement or relocation of a single person or economic activity. Management will develop Restoration/ reclamation or tree plantation plan to restore the project area after the construction phase of the project. Maximum Plantation will be done with native species within and outside the premises of the industrial estate, along the boundary wall and road side if directed. Also, in-front of main area, horticulture plan will be formulated and area for this will be kept reserved.

6 CHAPTER 6: ENVIRONMENTAL MANAGEMENT & MONITORING PROGRAM

6.1 Introduction

The primary objectives of the EMMP 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:
- Ensure the complete implementation of all mitigation measures.
- Ensure the effectiveness of the mitigation measures.
- Provide a mechanism for taking timely action in the face of unanticipated environmental situations.
- Identify training requirements at various levels.

6.2 Institutional Capacity

The overall responsibility for compliance with the environmental management plan rests with the project proponent. He will appoint a HSE/Project Manager of relevant qualification. HSE/Project Manager will act as Environmental Manager and will manage all HSE conditions at the PEQS.

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.

Following functionaries will be involved in the implementation of EMP:

- Project Proponent
- HSE Officer
- In-Charge Administration
- Supervisor of project

Organogram of authorities involved in the implementation of EMP in the proposed

6.3 Training Schedule

Training for the management/contractors/engineers and workers on environmental aspects of the project will be arranged during the constructional phase of the project. It will be imparted by a team of experienced trainers.

Management will hire or appoint HSE officer before the initiation of constructional 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.

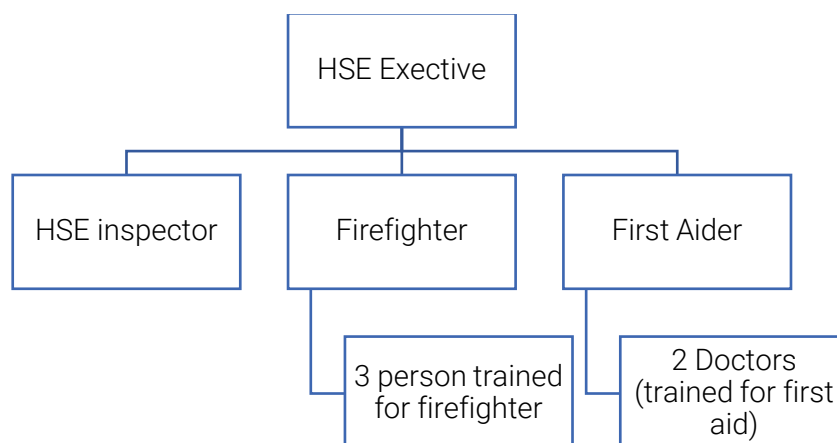


Figure 19: Institutional Capacity for the implementation of EMP

Table 13: Training Program

Sr. No.	Description of program	Labor/ Personnel involved	Time/ duration
1)	General HSE Training	Trainers and whole labor	Quarterly for 1 hour
2)	Instrument use/ workplace specific items	Trainers and whole labor	Quarterly for 1 hour
3)	PPEs use and safe work practices at work site.	Trainers and whole labor	Quarterly for 1 hour
4)	Reporting and investigating accidents/ incidents	Trainers and whole labor	Quarterly for 1 hour
5)	Emergency procedures	Trainers and whole labor	Quarterly for 1 hour
6)	Medical and first aid	Trainers and whole labor	Quarterly for 1 hour
7)	Health and safety promotion	Trainers and whole labor	Quarterly for 1 hour

In order to raise the level of professional and managerial staff, there is a need to upgrade their knowledge in the related areas. HSE/Project Manager should play a key role in this respect and arrange the training programs. HSE/Project Manager will provide training to staff and workers about the best environmental management practices at the construction 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 equipments, and health and safety related issues on the construction site.

The HSE/Project Manager will train all workers & staff in basic sanitation and health care issues (e.g., how to avoid malaria 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/Project Manager is being conducted Training on monthly or quarterly basis regarding health & safety, hygiene, firefighting and first aid.

6.4 Training Of Building Contractor

Training of building contractor & workers will be the part of the TORs regarding the construction of the scheme.

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.

6.5 Summary Of Impacts And Their Mitigation Measures

Table 14: Summary of Impacts and their Mitigation Measures

Project Component		Impacts	Significance	Mitigation Measures
Project Location		- Acquisition of land - Loss of environmentally sensitive areas - Changes in traffic pattern - Potential conflicts with stakeholders - Resettlement issues	Minor	✓ There is not any sensitive area near the project site. ✓ Many other industries are also working near the project site. ✓ The project proponent will achieve the PEQS/ PEQS at the boundary walls of the subject project to avoid the environmental impacts on the nearby industrial unit. ✓ There is no need to change the traffic pattern due the development of the subject project because few industries have been developed at the same road. ✓ It is recommended to settle the issues through scoping and specific group discussions. ✓ No resettlement issues. ✓ It is recommended for obtaining of approval from other relevant departments.
Project Design		- Soil structure and soil bearing capacity - Road infrastructure design - Emergency exits - Firefighting system - Wastewater disposal system design - Electricity hazards	Minor	✓ Safe road infrastructure design should be provided at the project site. ✓ Emergency exit points should be marked at the project site. ✓ Firefighting equipment must be maintained at the site in good working condition to cope with any emergency situation. ✓ Efficient wastewater disposal system should be designed for proper treatment of wastewater. ✓ Electricity system should be designed safe and sound.
	Land & Soil	Land or Soil Erosion during the construction phase	Moderate	✓ Sprinkling of water is recommended

Construction and Operation phase		- Habitat destruction - Scarring of the landscape and aesthetic beauty. - Clearing of native plants will disturb the complexity of the ecosystem of the proposed area. - Leakage of oil from storage area may contaminate soil		✓ After construction phase, the project proponent will restore the land by plantation. ✓ All spoils will be disposed of as desired and the site will be restored back to its original conditions ✓ Aesthetics of the area will be maintained. ✓ Oils, lubricants, chemicals, and other listed hazardous materials should be stored safely at their designated spots, enclosures or store rooms, which should be safe from rainfall and away from any potential source of fire
	Air pollution and Dust emission	- The transportation of the project machineries and material also may cause dust. - Un-metalled roads may cause dust. - Dust raised on dirt tracks by project-related vehicles. - Dust from drilling of deep holes. - Combustion products from vehicles used for project-related activities	Minor	✓ Air emissions-controlled devices must be installed to control the air pollution. ✓ Water the construction site periodically to minimize fugitive dust generation while laying foundation. ✓ Store all construction materials in a manner to minimize generation of dust and spillage on roads. ✓ During excavation works drop heights will be minimized to control the fall of materials reducing dust escape. ✓ Sprinkling of water must be done to control the dust or PM ✓ Vehicle emissions inspection should be done on regular basis ✓ Sprinkling should be done on the unpaved area to avoid dust pollution/ particulate matter. ✓ Vehicles/ trucks should be serviced regularly ✓ All project vehicles will be checked regularly to ensure that engines are in sound working condition and are not emitting smoke.
	Noise	The major sources of the noise at proposed project site are project related machinery.	Minor	✓ Personal Protective Equipment PPEs including Ear muffs, Ear plugs and other noise abating equipment will be provided to the workers and other staff of the subject project.

		• High noise level cause hearing loss, deafness, high blood pressure, headache, depression and mental disturbance. • Noise level will not exceed 75 dB(A) at the distance of 2 km radius, activity site is located at a safe distance from the nearest human settlement . • Noise from construction activities from site preparation, earth works, foundation and plant equipment installation		✓ Proper maintenance and tuning of the vehicles should be done. ✓ Sound proof room should be built for generator (if any) to control the noise. ✓ A speed restriction of 40 km/h will be imposed on all construction vehicles.
	Waste Water	• Domestic waste water from the camp • Minor generation of waste water from construction activity. • Water Contamination due to improper storage of construction material, • Water contamination due to improper debris disposal, • Spread of diseases, underground water contamination	Moderate	✓ Domestic waste water will be drained out in nearby local drain after treated in septic tanks ✓ Oils, lubricants, chemicals, and other listed hazardous materials should be stored safely at their designated spots, enclosures or store rooms, which should be safe from rainfall.
	Solid waste	• Solid waste may generate from construction activity, domestic and packing material of project related machineries. • Solid waste may generate from operation of project.	Minor	✓ A solid waste management division should be formulated to deal with the proper disposal of solid waste, supervised by HSE Manager, SW Manager, and other related personnel. ✓ Solid waste generated from the construction activity as sand, stones residues etc. that should be utilized in restoration of the quarry area whereas solid waste from the domestic sources should be disposed off properly

				✓ Proper solid waste management system is recommended for each individual industrial unit. ✓ Industrial ecology practices will be adopted wherever possible. ✓ 7 R's of sustainability is recommended ✓ Sludge will be removed and dispose off in scientific way. ✓ Solid waste related to the operation will also manage in scientific way.
	Health and Safety	• Health and safety issues will be arose during construction activity, handling of material, machinery and improper practices of work • Health and safety issue may arise during regular operations	Minor	✓ Use of PPEs should be implemented at workplace. ✓ First aid measures/medical facility should be provided to project related employees. ✓ Safe drinking water must be provided to workers, staff, and poor people of the area. ✓ Water consumption records should be maintained. ✓ Safety signs & boards should be placed at during construction activity. ✓ Construction site should be fenced properly to avoid any damage to nearby settlements. ✓ Smoking or any drugs should be prohibited during working hours or performing work. ✓ At the time of earthwork, fencing will be ensured for the area under the exploration.

6.6 Equipment Maintenance Detail

The proponent of the subject project will maintain records for Health, Safety & Environment and will hire Environmental / unit manager to check and deal with the unit issues.

All mobile equipment is to be inspected and maintained according to the following Equipment Inspection Schedule as a minimum. Records of all inspections and maintenance are completed and maintained for review and approval.

Maintenance of equipment, release of lubrication fluids, etc., is performed only in approved areas. Spills and leaks from equipment are cleaned up promptly.

Table 15: Equipment Inspection Detail

Type of Equipment	Type of Inspection	Schedule
Cranes – Crawler, Truck, Hydraulic, etc.	Complete inspection and certification	Before put to work and annually
	Critical items, controls, overall functioning	Daily
	Safety device, hooks, cables, electrical	Monthly
	Complete inspection	Every 3 months
	Repair	When failure occurs
	Preventative maintenance	Manufacturer's recommendation
Heavy Equipment	Complete inspection	Before put to work
Dozers, Backhoes	Complete inspection	Every 3 months
Compactors, Trucks	Repair	When failure occurs
	Preventative maintenance	Manufacturer's recommendation
	Operator's checklist	Daily
Miscellaneous	Complete inspection	Before put to work
Compressors, Welding Machines, Generators	Complete inspection	Every 3 months
	Repair	When failure occurs
	Preventative maintenance	Manufacturer's recommendation

6.7 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. Management will allocate 2% of total cost of the project as Environmental Budget for meeting the following purposes:

Table 16: Allocation of Environmental Budget

HSE training	On quarterly basis
Maintenance and management of environment	On regular basis
Maintenance of equipment	On regular basis
Restoration	As per requirement
Plantation	During the operation phase
Availability of PPEs	During construction and operation
Strategic planning to cope with any emergency	As per policy
Formulate the disaster management plan to cope with natural disaster	As per policy

Implementation of all these parameters will be included in the environmental budget. Any equipment failure will not be included in this budget.

6.8 Environmental Management Plan for Dr. Zia Pharmaceuticals.

Table 17: Environmental Management Plan

Sr. #	Aspects	Impact & Mitigations to be taken			
		Impacts	Mitigation measures Construction/Operation	Responsibility	Monitoring
Land acquisition for the proposed project					
1	Land acquired for the subject proposed project	Nil	The site proposed for the subject project is the property of the proponent.	Proponent	Environmental Consultant/ EPA PUNJAB
Land use & soil erosion					
2	Land Use & Soil	Particulate Matters (PM) pollution, Clearing of the vegetation Undulated patches. Scarring of the landscape and aesthetic beauty. Clearing of native plants will disturb the complexity of the ecosystem of the proposed area. Dust emissions will be generated during the construction. Flue gases will be generated due to the involvement of generators and other machinery.	Measures will be taken to avoid soil erosion and dust pollution. Restoration and reclamation plan will be developed to restore the natural landscape of the area. Plant nursery, garden will be developed to rehabilitate the native plants of the area. Project proponent will make all possible efforts to limit the impact on flora and fauna. The Management has serious concern and will take measures to preserve the environment and natural aesthetic beauty of the site.	HSE Department	Environmental Consultant/ EPA PUNJAB

Ambient Air Quality					
3	Air Quality	Particulate matter and fugitive dust emissions. Dust emission due to vehicles on un-metalled roads. Dust due to Construction. Dust raised on dirty tracks by project-related vehicles. Dust emission during earthwork Gaseous emissions from the vehicles Air pollution due to site visiting vehicles/ transporting trucks, hauled trucks, machinery.	Sprinkling of water is recommended on dusty roads and unpaved tracks to control the generation of dust and PM. Air emissions control devices must be installed to control the air pollution. Water the construction site periodically to minimize fugitive dust generation while laying foundation. Store all earthwork and construction materials in a manner to minimize generation of dust and spillage on roads. During excavation works drop heights will be minimized to control the fall of materials reducing dust escape: Temporary cover may be provided for earthwork if necessary. Vehicle emissions inspection should be done on regular basis. Sprinkling should be done on the unpaved area to avoid dust pollution/ particulate matter. Vehicles/ trucks should be serviced regularly. All project vehicles will be checked regularly to ensure that engines are in sound working condition and are not emitting smoke. Monthly monitoring is recommended by EPA certified labs to check the compliance with PEQS as per EPA PEQS Rules 2001.	HSE Department	Environmental Consultant/EPA PUNJAB

			Air quality was conducted by EPA certified lab and results are attached with this report.		
Noise & Vibration					
4	Noise	The major sources of the noise at site are project related machinery. High noise level cause hearing loss, deafness, high blood pressure, headache, depression and mental disturbance. Noise level will not exceed 75 dB (A) at the distance of 2 km radius, project site is located at a safe distance from the nearest human settlements. Noise from construction activities from site preparation, earth works, foundation and plant equipment installation.	Personal Protective Equipment PPEs including Ear muffs, Ear plugs and other noise abating equipment will be provided to the workers and other staff of the subject project. Proper maintenance and tuning of the vehicles should be done. Sound proof room should be built for generator (if any) to control the noise. A speed restriction of 40 km/h will be imposed on all construction vehicles. Monthly monitoring is recommended by EPA certified lab to check the compliance with PEQS as per EPA PEQS Rules 2001. Noise level monitoring was conducted at different location and results are attached as Annexure-H with the report.	HSE department	Environmental Consultant/ EPA PUNJAB
Soil Contamination					
5	Soil contamination	Contamination of soil due to oil and other chemicals leakage or spillage	SOPs will be developed for the storage of oil and other chemicals handling and transportations. Soil contamination must be controlled by adopting mitigation measures such as storage of oil, fuels etc. under paved area, by maintaining leakage	HSE Department	Environmental Consultant/ EPA PUNJAB

		Soil contamination due to waste water generated from the project activities	record of construction vehicles, and by regular inspection (admitted by proponent). Waste water treatment facilities should be installed during construction and operational phases of the project to treat the wastewater. Water from the treatment facility must not be injected into the sub soil. Tarpaulin sheets should be placed under generators and other leaching substances Treated water will be used for plantation. Proper storage of oil, fuel etc. is recommended under paved area.		
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.	HSE Department	Environmental Consultant/ EPA

			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. At the time of construction and earthwork, fencing will be ensured for the area under the exploration. Further proper housekeeping and safety arrangements must be ensured at the subject project.		
Waste Water					
7	Waste water	Minor generation of waste water from construction activity. Water Contamination due to improper storage of construction material, Water contamination due to improper debris disposal, Waste water pollution, Spread of diseases, underground water contamination	Waste water generated from the constructional activity will be used as sprinkling on the dusty tracks or for restoration of the land. Waste water monitoring is recommended on monthly basis. Waste water treatment facility is recommended for each individual industry to treat waste water. After the treatment in wastewater treatment facility, water will be disposed off in the wastewater collection system present at the project site.	HSE department	Environmental Consultant
Solid waste generation					

8	Solid Waste Generation	Land & soil contamination, aesthetic degradation, foul smell etc. Solid waste generation from the construction activity, domestic and project process sources	A solid waste management division will be formulated to deal with the proper disposal of solid waste, supervised by HSE Manager, SW Manager, and other related personnel. Constructional waste must be utilized for road filling or maintenance purposes. Recycling of material should also be implemented up to possible extent. Existing Project related solid waste should be handed over to contractors. Sludge from the septic tank must be replaced on regular basis. It is recommended to ensure Proper housekeeping. It is recommended to adopt proper waste management system. Industrial ecology practice will be adopted wherever applicable and possible. 7 R's of sustainability is recommended.	HSE Department	Environmental Consultant/ EPA PUNJAB
Odor					
9	Odor	There will be no source of odor from the both construction and operation of the project	Nil	NA	
Energy requirement					
10	Energy requirement	Resource depletion	Do not waste the energy/electricity when there is no need of it. Use energy efficient machinery and equipment	HSE Department	Environmental Consultant/ EPA PUNJAB

			Use energy saving products Conduct and maintain records for energy audits Do not leave the machinery in running form when there is no working being done Machinery must never be left unattended It is recommended to save and conserve the energy and adopt energy efficient technologies during the construction phase		
Socio economic impacts					
11	Resettlement	Resettlement issues	The proposed area under the investigation is devoid-off any human settlement and it is the property of the government.	NA	NA
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 coordinator 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

6.9 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:

Table 18: Environmental Monitoring

Sr. No.	Components	Parameters	Frequency
	Wastewater Quality	All parameters as per PEQS	Quarterly
1	Ambient Air Monitoring	All parameters as per PEQS	Quarterly
2	Noise Level	All parameters as per PEQS	Quarterly
3	Water quality	All parameters as per PEQS Some parameters on site, Others in lab	Quarterly

7 CHAPTER 7: STAKEHOLDERS AND PUBLIC CONSULTATION

7.1 Introduction

The consultation process with various stakeholders of M.A.C.E Engineering Consultants., has been carried out to involve community and other stakeholders at earlier stages. Information dissemination during public consultation is fundamental to successful conclusion of the Project. This chapter describes the objectives and details of the consultative process adopted; its outcome and the conclusions drawn thereafter.

Public consultation has been done during the planning and design phases of the Project with Government departments, line agencies, NGOs and affected persons of the Project area; concerns and suggestions thereafter have been taken into account and included where appropriate. The consultative process to date has been effective in addressing the concerns over the Project construction and operational impacts.

7.2 Objectives Of Consultation

Public consultation plays a vital role in studying the effects of any development project on stakeholders and in its successful implementation and execution. It affords an opportunity to exchange knowledge with those who as members of the society are concerned with the Project, immediately or remotely. Referring particularly to a Project related to environmental assessment, involvement of public is all the more essential, as it leads to better and more acceptable decision-making.

The objectives of the stakeholder and Public consultation conducted in Project Area were;

- To apprise the Project community and stakeholders about Project interventions and potential impacts,
- To record the community concerns and recommendations regarding the proposed Project;
- To address/incorporate those recommendations in the Project design to the extent possible and;
- To share the mitigation measures with the local communities.

7.3 Consultative Aspect

The proposed Project involves stakeholders from various segments of the society, who have direct or indirect interest in the developmental activity. The Environment and Social team has endeavored to hold consultative sessions with a number of prominent stakeholders (Project Proponent, Government departments, line agencies, NGOs and affected persons of the Project Area) to evince their views on the proposed Project and their opinions, suggestions, understanding on various issues and concerns. The consultations aimed specifically at:

- Dissemination of Project information through discussions, education and liaison.
- Eliciting the comments and feedback on the proposed Project.
- Documentation of information narrated by the stakeholders.
- Documentation of mitigation measures proposed by the stakeholders.
- Incorporation of public concerns and their addressal in the EIA/EMMP.

7.4 Identification Of Main Stakeholders

There are two types of stakeholders related to the project i.e. primary and secondary stakeholders. Primary stakeholders are those which are directly affected by the Project activities and secondary stakeholders are those which are affected indirectly.

The proposed Project does not have direct impacts on any individual; therefore, no primary stakeholders are identified. Secondary stakeholders are institutional stakeholders, which includes Project Proponent, local Government representatives, and Government officials of the relevant departments, NGO, general public, local residents, shop keepers, vendors, hospital owners/staff, teachers, pedestrians, and businessmen/traders of the city. The categories of the stakeholders who provided useful feedback, included:

- Project Proponent
- Government officials
- Environmental practitioners and experts
- Teachers/students
- Shopkeepers

All those stakeholders have different types of stakes according to their involvements in various aspects of the Project. The consultant tried to contact all the stakeholders and shared their views and concerns and also interacted with the community-based organizations that can support the community.

7.5 Meetings With Stakeholders

A series of consultation was carried out with stakeholders and general public in Sundar Industrial Estate and nearby areas. Further list of official stakeholders and local people consulted is attached as **Annexure-K**.

The purpose of this survey was to achieve the objectives of the consultation, highlight the main issues in the implementation of the proposed Project and finally propose mitigation measures. Open and close ended questionnaire was used to collect the views concerning the assessment survey.

Scoping sessions and informal group discussions were also carried out with local residents and local government representatives regarding the proposed Project. The outcome of whole consultation process was very encouraging. The following issues were discussed during Informal Meetings with local representatives:

- i. Brief Description of the Project
- ii. Current economic condition in the area

- iii. Suggestions for improvement in the current industrial system and all activities related to industry
- iv. Perceptions about the proposed Project
- v. Perceived impacts of the proposed Project



Figure 20: Public Consultation

The local poor people predominantly requested for unskilled and semi-skilled jobs during implementation of the Project. On the basis of the consultations so far, it appears that the Project will have no insurmountable environmental and social impact. The community generally supported the proposed Project. They have opinion that the Project will not only provide livelihood during construction stage, but also will help to eradicate the burning issue of regarding import of materials.

7.6 Analysis Of Stakeholder Consultation

7.6.1 Sample Size

40 sample size 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.

7.6.2 Statistical Analysis

SPSS 19.0 has been used for the statistical analysis of the data collected during the visit of study site villages through questionnaires.

7.6.3 Result And Discussion

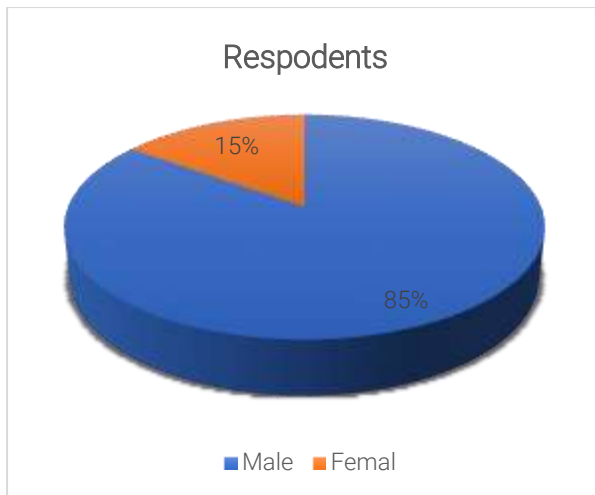


Figure 21: Gender Ratio of Respondents

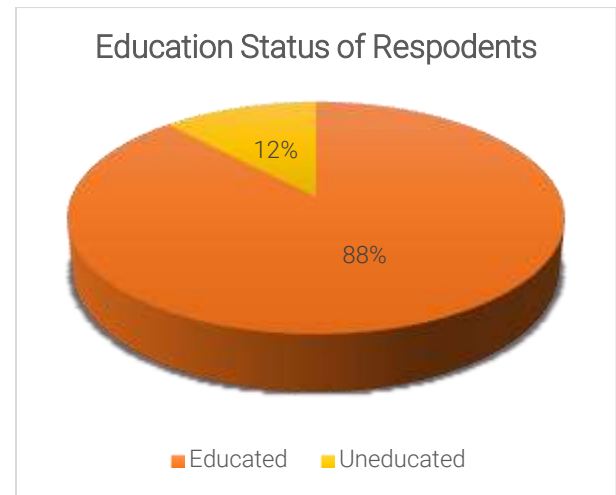


Figure 22: Education status of respondents

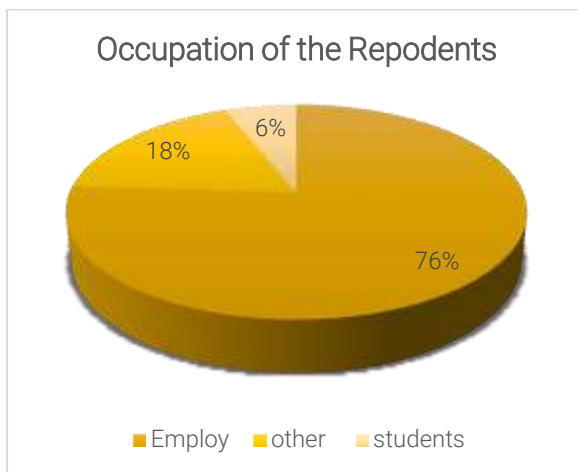


Figure 23: Occupation of respondents

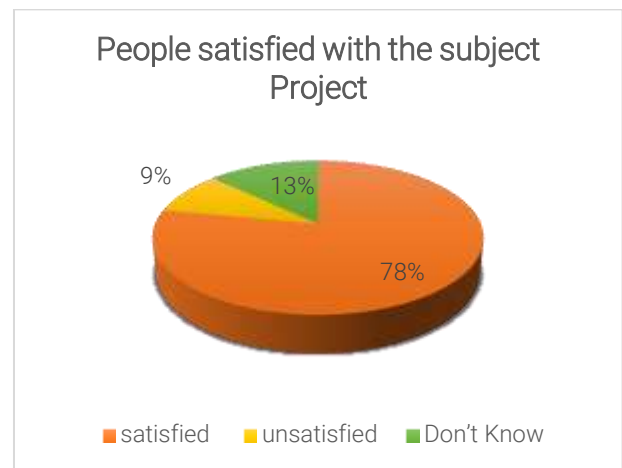


Figure 24: Satisfaction of respondents

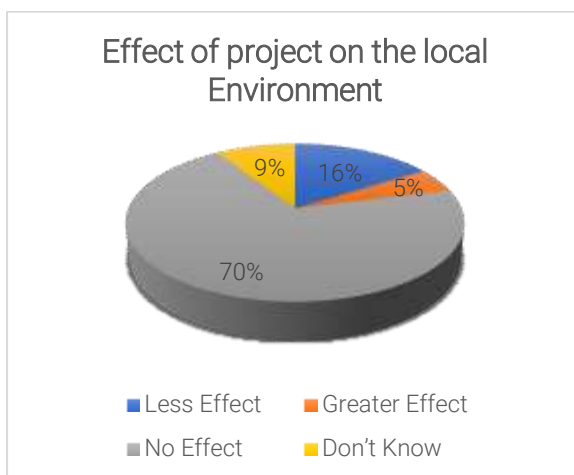


Figure 25: Effect of project on local environment

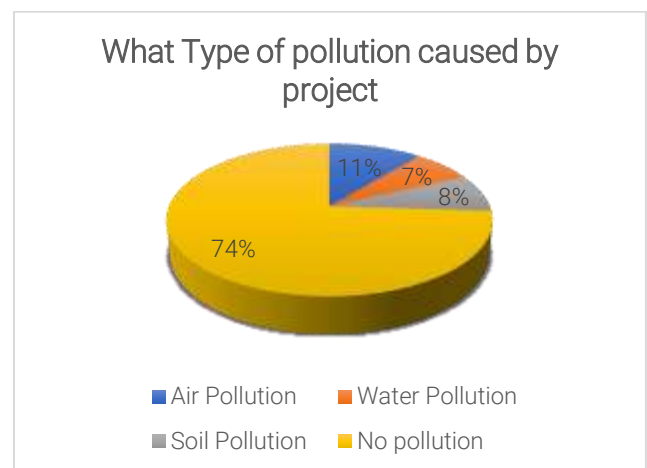


Figure 26: What type of pollution caused by project

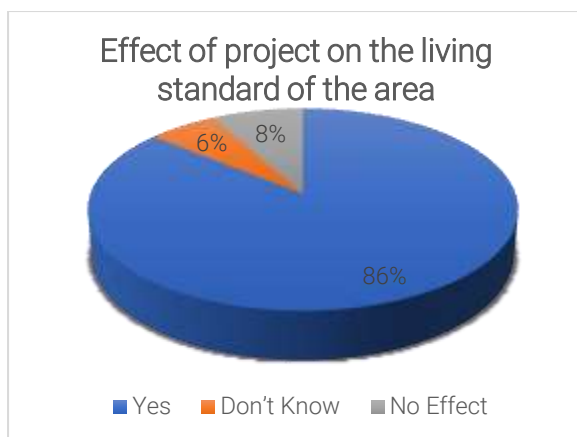


Figure 27: Effect of project on the living standard of area

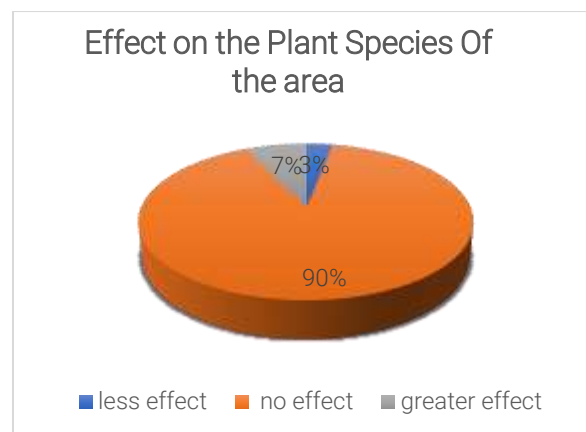


Figure 28: Effect on plant species of area

According to graphical representation, 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. 88 % respondents were educated while 12% were uneducated. So, according to the survey overall education status of the area is good.

As per survey, 78% people were satisfied with the proposed project and they gave positive remarks regarding the existing unit and proposed project as they got job over there, their living standard raise over working there. While 13% respondents were have no opinion regarding the project and 9% respondents were not satisfied with the production unit due to their concern regarding the aesthetic degradation and no preference to local people for jobs. Majority were in favor that no effect will be produced by this project.

7.7 Summary Of Issues Raised By Stakeholders

A summary of the key issues raised by stakeholders and how these are being addressed by Project Proponent is provided in Table below.

Issue	Aspect/Concern raised by Stakeholders	Project Proponent Commitments
Employment Opportunities	Expectations of employment are very high. Job opportunities are less for herders as they generally have less skills and training.	Employment is the main priority of the industry. Mostly locally skill and unskilled labor will be prioritized and also there will be job in executive level. Around 50-60 person will be employed by the industry.
Training Opportunities	People are keen to consult with subject industry if the Project offers training and upgrading opportunities to	Development of the Training Strategy, including commitment of allocation of budget investment

	enhance their trade or professional skills.	for training infrastructure, delivery and design. Installation of training facilities in for worker of the company and students will also be accommodate. The internship program will offer to the students to develop professional skills.
Health & safety	Truck traffic is a main concern because the road used by the Project passes through a number of small communities and different industries and there will be a high volume of trucks transporting concentrate.	Extensive consultation on the road corridor and safety aspects, including on herder and animal crossings. Development of Transport Management Plan including traffic safety training. Traffic advisory signs will be installed along project site and all nearby specific areas.
Local economy and business development	Local service providers are keen to participate in providing services to provide raw material and expect to receive in order to adjust their businesses to meet specific needs. Local businesses want to receive support in terms of finance and facilities to diversify their businesses. Local/regional companies and entrepreneurs have limited understanding about meeting the high volumes required by the Project and the quality standard, but are keen to know these requirements so they can become suppliers.	Proponent has main focus that they will all the material regarding construction and plant operation to buy from the local market. This will help the local and small business and to people who are keen interested to become suppliers.
Environmental Issues	Dust and noise impacts, particularly from the construction activities and in operation of mechanically unfit machines, are of concern to herders and other residents. Environmental degradation during road construction and use. Loss and change of vegetation due to soil degradation. Increased waste along project boundary and around economic zone.	Implementation of controls under the Environmental Management Plans, including on and off-site dust and noise monitoring. A seed rehabilitation program has been established and initial work has been completed in economic zone and along the boundary. A Participatory Environmental Monitoring Program will be launched to spread awareness.

Water quantity and quality	Water quality and quantity, and impacts from the wastewater disposal are all key concerns for nearby herders.	Implementation of consultation in relation to water use and development of the Participatory Environmental Monitoring Program. Water treatment plant will be installed by the proponent that will help to safe disposal of the water.
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8 Chapter 8: Conclusion & Recommendations

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

8.1 Conclusion

The EIA study reveals that the project is economically viable and socially acceptable and the proponent will implement the project in the environment friendly manner. He will adopt all the necessary measures to control any impact if resulting from the project. He will provide the safe drinking water, safe working environment, proper training and first aid facility to all workers and staff. The project will generate additional jobs during construction and operation phases.

8.2 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 and near the project area is recommended.
- The Management of will continue to assist the local communities as a corporate/social responsibility (CSR).
- Any seepage and leakage will be controlled through proper mitigation measures.
- Sound proof room should be constructed for generator to control its sound.
- Use of narcotics and smoking must be prohibited during working, filling or handling of fuel.
- PPEs must be provided to workers such as gloves, masks, etc.
- Proper solid waste management system must be adopted.
- Safety signs, safety board's etc. must be placed on site during various developmental stages.
- Machinery will never be left in running condition.
- First Aid measures, health & safety Equipment (PPEs) will be provided to workers.
- Fire Fighting station & system will be installed.
- The management of subject project will assist the local communities as a corporate social responsibility.
- Jobs and employment will be provided to the local area.

The present EIA report is enough to meet the administrative and legal framework. After the complete study of the project, it is concluded that project will not have significant adverse impacts on the nearby community and on environment. Overall the project will have positive impacts on the local population and country as a whole. Therefore, it is requested for the environmental approval for the subject project.

REFERENCES:

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- 4) Pakistan Environmental protection act 1997
- 5) Punjab Environmental Protection Act 1997 (Amended 2012)
- 6) Guideline for the Environmental Assessment
- 7) Regulations of Environmental Assessment, Regulations 2000
- 8) National Conservation Strategy- Pakistan
- 9) Guideline for the public consultation
- 10) National Resettlement Policy and Ordinance
- 11) National Environmental Quality Standards (Self-monitoring and reporting by the industry)
- 12) Labor laws
- 13) Canal And Drainage Act, 1873
- 14) National Environmental Policy 2005.
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- 21) Attock Chamber of Commerce Industries (<http://www.acci.org.pk/Attock.html>)
- 22) Sectorial Guideline for environmental reports, industrial states
- 23) Pakistan Environmental Protection ordinance (PEPO), 1983
- 24) OSHAS 1800 for health and safety

GLOSSARY

Words	Dictionary
mitigation	The action of lessening in severity or intensity
legislation	law enacted by a legislative body
compliance	Acting according to certain accepted standards
flora	All the plant life in a particular region or period
fauna	All the animal life in a particular region or period
demarcated	Separate clearly, as if by boundaries
Screening	The display of a motion picture
substitutions	An event in which one thing is substituted for another
regulations	An authoritative rule
stakeholders	A person or organization with an interest or concern in something
vulnerable	Susceptible to attack