

ENVIRONMENTAL IMPACT ASSESSMENT (EIA) REPORT



CONSTRUCTION OF VETERINARY MEDICINE MANUFACTURING PLANT

AT

**30-KM LAHORE SHEIKHUPURA ROAD, DISTRICT
SHEIKHURPUA**

BY

M/S LUCKY CORE INDUSTRIES LIMITED ANIMAL HEALTH BUSINESS

August 2023

Prepared by
Environmental Consultancies & Options (ECO)



ECO is a professionally run environmental management & engineering firm with strong backup of highly qualified and experienced personnel. The company is specialized in diversified fields and continuously identifies the current and future demands related to environment and engineering. ECO services include environmental assessments, audits, risk assessments, environmental monitoring, trainings, water, wastewater treatment and alternate energy.

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EXECUTIVE SUMMARY

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i. Title and Location Of Project

The proposed project is the construction / installation of “Veterinary Medicine Manufacturing Unit” by LCI Limited Animal Health Business at LCI Polyester Fiber Plant, located at 30-KM- Lahore-Sheikhupura Road, Sheikhupura. The proposed project will manufacture Oral Powder & Liquid Veterinary Medicines and Liquid Veterinary Injections.

ii. M/s LCI Animal Health Business– The Proponent

Luck Core Industries Limited

Lucky Core Industries Limited that was formerly known as ICI Pakistan was originally established in 1944. With over 76 years of successful operations the Organization has maintain a very high caliber of standard operating procedures and practices in terms of environmental and overall occupational health and safety, continues to strive to improve working of various activities to objectively meet local requirements and relevant by laws requirements for emissions to air, wastewater, drinking water, ambient air quality and noise, occupational health and safety practices and satisfy the requirements of various environmental legislations as prescribed by national and international agencies. LCI Limited supply essential products to almost every industry in the country through our five diverse businesses: Polyester, Soda Ash, Chemicals & Agri Sciences, Pharmaceuticals and Animal Health. LCI Limited is part of Yunus Brothers Group (YBG), one of the fastest-growing and most progressive Pakistani conglomerates with a wide portfolio of

businesses including, but not limited to: cement, textiles, power generation and commodity trading.

LCI Animal Health Business

Over four decades of pioneering technologies have positioned LCI as complete farm-management solution providers to livestock and poultry stakeholders across Pakistan. LCI Animal Health Business offer superior quality products encompassing a wide range of therapeutic categories: anthelmintic, antiprotozoal, antibacterial, restoratives, intrauterine, udder health, growth promoters, disinfectants, dairy and poultry nutrition, insemination, and biologicals catering to the industry's livestock and poultry segments. The Animal Health Business of LCI Limited comprises of three segments:

1. Livestock
2. Poultry
3. Bovine Genetics

Table (a) Contact Details of the Proponent

Proponent's focal person	Mr. Ghazanfar Mahmood
Proposed Factory Address	LCI Animal Health Plant, 45 km Multan Road Lahore
Head office Address	63 Mozang Rd, Jinnah Town, Lahore, Punjab 54000.
Contact details	UAN (042) 111 100 200 Telephone: +92-21-3565-9506 Fax: +92 21 35659506 Email: Ghazanfar.Mahmood@luckycore.com Website: https://luckycore.com/

iii. Name of the organization preparing the report

ECO is a professionally run environmental management & engineering firm with strong backup of highly qualified and experienced personnel. The company specializes in diversified fields and continuously identifies the current and future demands related to the environment and engineering. ECO services include environmental assessments, audits, risk assessments, environmental monitoring, training, water, wastewater treatment and alternate energy.

Table (b) Contact Details of the Consultant

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iv. A brief outline of the proposal

The proposed construction of veterinary medicine unit will take place within the premises of LCI Limited Polyester Fiber Plant, Sheikhupura on 30-KM Lahore-Sheikhupura Road. The proposed manufacturing unit will cover an area of 84,827 Sq. meter out of which constructed area makes up 20327.8 m² whereas 59940.5 m² land is a plain/open area. The proposed project will manufacture Oral Powder & Liquid Veterinary Medicines and Liquid Veterinary Injections.

v. Major Impacts and Recommendations for Mitigation Measures

All the impacts associated with the proposed project activities are localized, temporary, and manageable. The following tables present major impacts associated with proposed project activities (construction & operation) along with their relevant mitigation measures.

MAJOR IMPACTS AND MITIGATION MEASURES (Construction Phase)

Impact	Mitigation Measures Recommended for Construction Phase
Physical features (topography and soil)	- Excavations should be kept confined to the specified location as per the approved engineering drawings and unnecessary excavations should be avoided. - Excavated areas will not be left unattended and unfilled for long
Water Resources	Temporary septic tanks of adequate capacity should be installed for receiving and treating wastewater from all temporary worksite toilets and at the temporary container offices, if any.
Air Pollution and Dust Emission	- All personnel working on the project should be trained prior to starting construction on methods for minimizing air quality impacts. - Construction vehicles drivers should be under strict instructions to minimize unnecessary trips, refill petrol fuel tanks in the afternoon, and minimize idling of engines
Noise & Vibration	- All the construction equipment and vehicles used should be in good working condition, properly lubricated and maintained to keep noise within the permissible limits. - Noise monitoring should be done on quarterly basis by 3rd party.
Soil Contamination	All spoils should be disposed of as properly and the site should be restored back to its original conditions.

Impact	Mitigation Measures Recommended for Construction Phase
	- Oils, lubricants, chemicals, and other hazardous materials will be stored safely at their designated spots, enclosures, or storerooms, which will be safe from rainfall and away from any potential source of fire. - All machinery and materials will be stored at the designated areas and compounds. - All the unspent and left-over materials will be completely removed offsite upon completion of construction and the site will be restored to original or near to original condition
Solid Waste and Littering	- Excavation and construction waste should be recycled or reused to ensure that materials that would otherwise be disposed of as waste are diverted for productive uses. - Provide bins for construction workers and staff at locations where they consume food. Conduct ongoing awareness with staff of the need to avoid littering.
Health and Safety	- Ensure the provision of Personnel Protective Equipment's (PPE's) such as face masks, helmet, shoes, gloves, glasses, and earmuffs to workers to avoid worksite accidents and health problems. - Training and awareness of workers regarding safety issues will be ensured once a week on once in a month.
Biological Environment	- Strict instructions given to all personnel working in project area to refrain from killing, capturing, or disturbing any species of bird, reptile or mammal encountered during project activities, except in self-defense. - No removal of vegetation will be done at the project site.

Impact	Mitigation Measures Recommended for Construction Phase
Social Environment	Local skilled and unskilled worker should be hired for the proposed project, hence bringing economic prosperity

MAJOR IMPACTS AND MITIGATION MEASURES (Operation Phase)

Impact	Mitigation Measures Recommended for Operation Phase
Wastewater	- An efficient effluent treatment plant is proposed within the plant facility to treat wastewater coming from the production process - Domestic sewage will be discharged into an existing drain after treatment
Solid Waste	- Development and implementation of a waste management plan by LCI Limited Animal Health Business, to properly handle and dispose of both solid and liquid waste generated during the manufacturing process. This plan would outline procedures for segregating, recycling, and treating waste, minimizing its impact on the environment.
Air Quality	- Generators to be used at the site will be properly encased and serviced regularly. - Transportation vehicles and machineries to be used at the plant will be properly and timely maintained and serviced regularly to control the emission. - Emission testing will be done on quarterly basis by 3rd party.
Noise and Vibration	- Noisy equipment/machinery will be housed in closed buildings. - Pumps will be regularly tested for an engineering fault.

Impact	Mitigation Measures Recommended for Operation Phase
	- Generator will be enclosed in a sound dampening enclosure. - Employees working in high noisy areas will be moved to quiet areas in order to limit their exposure.
Fire safety	- The whole plant will be designed and constructed according to international standards for the prevention and control of fire and explosion hazards. - Routine inspection will be done to check that the area around the generator is free of clutter and no combustible material is present. - Accidental spills will be immediately cleaned up. Workers will be trained on handling accidental spillage of flammable substances that may trigger fires. - Fire extinguishers, fire hydrants and fire alarms will be provided at convenient locations within the facility. These equipment will be regularly inspected and maintained by a reputable fire security company.
Occupational Hazards and Accidents	- Onsite risk assessment to identify certain hazards and appropriate handling of them for the security of working personnel. - Necessary health and safety rules shall be enforced by the management. - First Aid kits should always be available at the site and staff members trained in first aid administration. - Clear signage should be posted alerting of possible danger situations.

Impact	Mitigation Measures Recommended for Operation Phase
Socio-economic Impacts	- Complaints from the people shall be recorded and solved on immediate basis. - The employer and site manager should try to resolve any grievance in the first instance.
Positive Impacts	There are numerous positive impacts that will be resulted due to successful execution of the project. Some of them are: - Poverty Alleviation - Improvement in local businesses - Improved Infrastructure. - Employment Opportunities

vi. Proposed Monitoring

Monitoring is one of the key components of effective management for quality control. Monitoring support is essential in almost all stages of pollution control and abatement programs. The decisions based upon monitoring results are far reaching accurate, reliable and comprehensive.

The proposed monitoring will include third party audits (the projects spanning over the period of 6 months), weekly inspections by engineering and environmental personnel, and EPA officials to check compliance to the environmental standards (environmental monitoring will be carried out through a third-party certified laboratory). Following environmental parameters were monitored for the proposed project:

- Drinking Water (Chemical and Physical Analysis)
- Wastewater (Chemical and Physical Analysis)

- Ambient Air Quality
- Noise Levels

vii. Conclusion

ECO has concluded that:

“All environmental and social issues involved during the project activities are manageable, therefore it is concluded that the project is environmentally friendly, financially viable, economically sustainable, generally neutral and pro-poverty alleviation”

Environmental Impact Assessment (EIA) Report
Construction of Veterinary Medicine Plant by LCI Limited
30-Km Lahore-Sheikhupura Road-District Sheikhupura.

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CHAPTER 1

INTRODUCTION

Chapter One

INTRODUCTION

1.1 Purpose of the Report

To evaluate likely impacts/risks associated with the proposed Installation of Veterinary Medicine Plant on various components of the environment and to achieve certain environmental objectives besides the existing local legal requirements, M/s Lucky Core Industries (LCI) Limited has hired Environmental Consultancies & Options (ECO) to carry out Environmental Impact Assessment (EIA) study of the proposed project located at LCI Limited Polyester Fiber Plant, District Sheikhupura.

Therefore, ECO has carried out detailed impact assessment study covering all the features of the environment i.e., physical, ecological, and socio-economic. The outcome of the study is the EIA report which will be submitted to Punjab EPA to obtain Environmental Approval/NOC for the construction phase.

1.2 Identification for Project and Proponent

1.2.1 The Proposed Project

The proposed project involves construction/installation of a Veterinary Medicine Manufacturing Unit at LCI Limited Polyester Fiber Business located at 30-Km-Lahore-Sheikhupura Road, District Sheikhupura, Punjab.

A veterinary medicine manufacturing plant is a facility dedicated to the production of pharmaceutical products specifically designed for animals. These plants specialize in the manufacturing, packaging, and distribution of veterinary medicines, including medications, vaccines, and other healthcare products for various animal species.

1.2.2 M/s LCI Animal Health Business— The Proponent

Luck Core Industries Limited

Lucky Core Industries Limited that was formerly known as ICI Pakistan was originally established in 1944. With over 76 years of successful operations the Organization has maintain a very high caliber of standard operating procedures and practices in terms of environmental and overall occupational health and safety, continues to strive to improve working of various activities to objectively meet local requirements and relevant by laws requirements for emissions to air, wastewater, drinking water, ambient air quality and noise, occupational health and safety practices and satisfy the requirements of various environmental legislations as prescribed by national and international agencies. LCI Limited supply essential products to almost every industry in the country through our five diverse businesses: Polyester, Soda Ash, Chemicals & Agri Sciences, Pharmaceuticals and Animal Health. LCI Limited is part of Yunus Brothers Group (YBG), one of the fastest-growing and most progressive Pakistani conglomerates with a wide portfolio of businesses including, but not limited to: cement, textiles, power generation and commodity trading.

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Over four decades of pioneering technologies have positioned LCI as complete farm-management solution providers to livestock and poultry stakeholders across Pakistan. LCI Animal Health Business offer superior quality products encompassing a wide range of therapeutic categories: anthelmintic, antiprotozoal, antibacterial, restoratives, intrauterine, udder health, growth promoters, disinfectants, dairy and poultry nutrition, insemination, and biologicals catering to the industry's livestock and poultry segments.

- International synergies have allowed LCI Animal Health Business to bring global advancements to Pakistan, and their partners rank among the leading animal health companies of the world. This formidable roster includes MSD Animal Health, Elanco, Bayer Animal Health, Trouw Nutrition, Lanxess, Mervue Laboratories, Cogent Breeding UK, ST Genetics, Berg + Schmidt, Choong Ang Vaccine Laboratories (CAVAC), Champrix, Vemo 99 Ltd and Norbrook Laboratories.
- In addition to their global collaborations, they have added value the lives of local farmers with an exciting range of high-quality generics offered under the brand umbrella of Farmer's Choice. With these products, they aim to improve animal and veterinary care in Pakistan.
- With innovative technologies and farm-management solutions at their disposal, their vision is to improve the lives of their stakeholders through enhanced productivity and committed customer service.

The Animal Health Business of LCI Limited comprises of three segments:

1. Livestock
2. Poultry
3. Bovine Genetics

Table 1.1: Contact Details of the Proponent

Proponent's focal person	Mr. Ghazanfar Mahmood
Proposed Factory Address	30-KM Lahore Sheikhupura Road District Sheikhupura
Head office Address	63 Mozang Rd, Jinnah Town, Lahore, Punjab 54000.
Contact details	UAN (042) 111 100 200 Telephone: +92-21-3565-9506 Fax: +92 21 35659506 Email: Ghazanfar.Mahmood@luckycore.com Website: https://luckycore.com/

1.3 Environmental Consultancies & Options (ECO) - The Consultants

ECO is a professionally run environmental management & engineering firm with strong backup of highly qualified and experienced personnel. The company specializes in diversified fields and continuously identifies the current and future demands related to the environment and engineering. ECO services include environmental assessments, audits, risk assessments, environmental monitoring, training, water, wastewater treatment and alternate energy. ECO is serving market niche with a broad range of high technology products and services to a wide spectrum of industries in Pakistan. ECO is a member of groups of companies. The other members are:

- Global Waste Management (GWM)
- Global ECO Laboratories (GEL) [ISO 9001:2000 Certified: ISO 17025:2005]
- Global Technologies (GT)

Table 1.2: Contact Details of the Consultant

Contact Person	Mustafain Haider
Address	2 nd Floor, 4-5 Commercial Area Main Cavalry Ground Lahore Cantt.
Contact details	Phone No: 04236670097-98 Fax: +92-42-6681281 Email: info@eco-intl.org Website: https://eco-intl.org/

1.4 Nature, Area/Size and Location of Project

1.4.1 Nature of the Proposed Project

The proposed project is the construction / installation of “Veterinary Medicine Manufacturing Unit” by LCI Limited Animal Health Business at LCI Polyester Fiber Plant, located at 30-KM- Lahore-Sheikhupura Road, Sheikhupura. The proposed project will manufacture Oral Powder & Liquid Veterinary Medicines and Liquid Veterinary Injections.

1.4.2 Area/Size of the Proposed Project

M/s Luck Core Industries Limited, Veterinary Medicine manufacturing unit will cover an area of 84,827 Sq. meter out of which constructed area makes up 20327.8 m² whereas 59940.5 m² land is a plain/open area.

Table 1.3: Estimated Area of Veterinary Medicine Manufacturing Plant

Total Area (sq.m)	Constructed/Structured Area (sq.m)	Plain / Open Area (sq.m)
84,827	20327.8	59940.5

1.4.3 Location of the Proposed Project

The proposed construction will be carried out within the existing premises of LCI Limited Polyester Fiber Plant. The plant will be located at 30-KM Lahore-Sheikhupura Road District Sheikhupura. The project site is easily accessible through the main Sheikhupura-Lahore National Highway N-60. The geographical coordinates of the proposed site are given as Table 1.4, whereas the location maps of LCI Polyester Fiber Business and proposed site are given as Figure 1.1. and 1.2 respectively.

Table 1.4: Geographical Coordinates of the Proposed Site

Company	Longitude	Latitude
M/s LCI Limited Veterinary Medicine Manufacturing Unit	31°41'29.86"N	74° 3'14.83"E

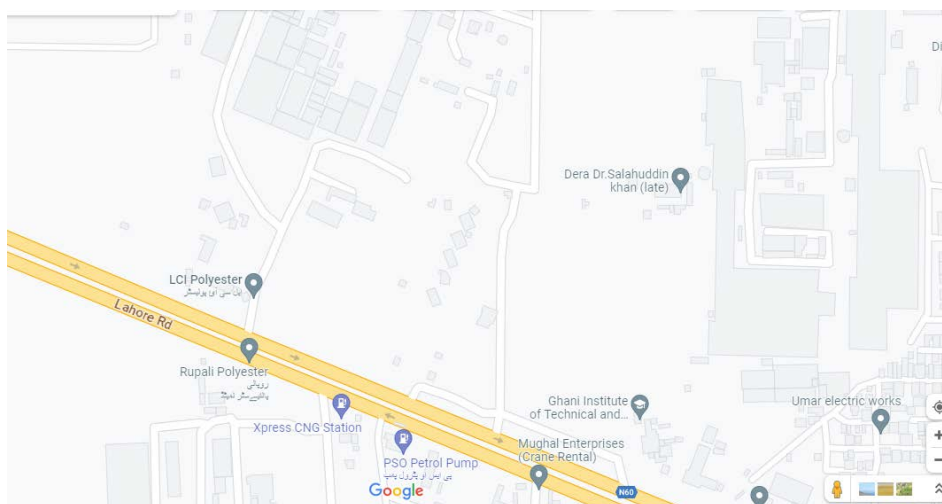


Figure 1.1: Google Map of LCI Polyester, Sheikhupura

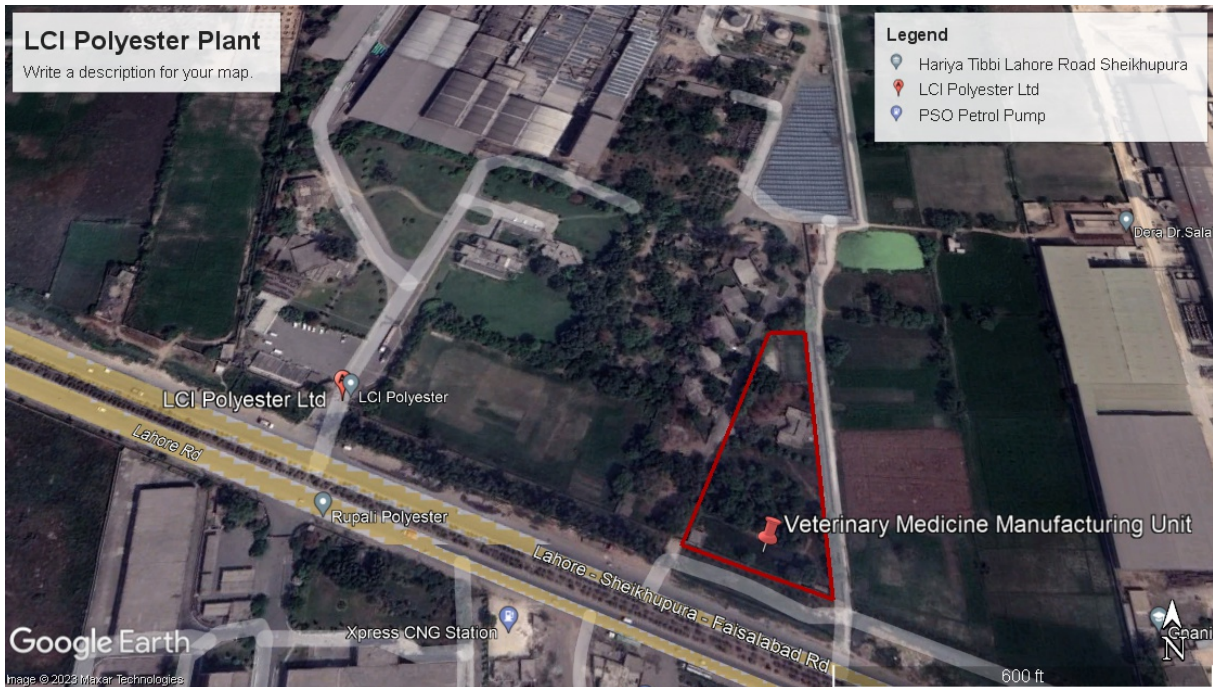


Figure 1.2 Google earth location of the Proposed Project site

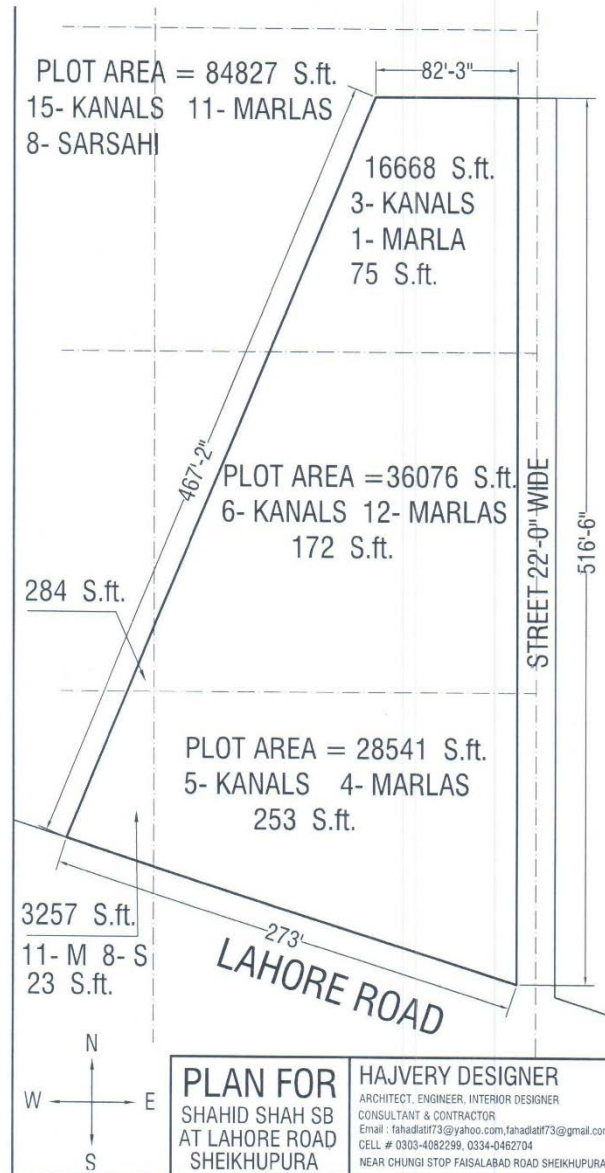


Figure 1.3: Site Layout of LCI Limited Veterinary Medicine Plant, located at 30-KM Lahore-Sheikhupura Road, District Sheikhupura

CHAPTER 2

SCREENING

Chapter Two

SCREENING FOR ENVIRONMENTAL ASSESSMENT

2.1 Screening for Environmental Assessment

The preparation and submission of an Environmental Impact Assessment (EIA) report for any development project is a statutory obligation under Punjab Environmental Protection Act, 1997 (PEPA, 1997) amended in 2012 in terms of Section 12 of the Act which states as under:

“No proponent of a project shall commence construction or operation unless he has filed with the Government Agency designated by Federal Environmental Protection Agency or Provincial Environmental Protection Agencies, as the case may be or where the project is likely to cause an adverse environmental effect an Environmental Impact Assessment (EIA) and has obtained from the Government Agency approval in respect thereof.” Review of IEE & EIA Regulation 2000, Schedule-II clearly states the list of projects requiring EIA.

2.1.1 Type and Category of the Project

According to Section 12 of Punjab Environmental Protection Act 2012 and its regulation “Review of Initial Environmental Examination and Environmental Impact Assessment Regulations, 2022”, the present construction project falls under the ***Schedule-II (EIA) Category B (2)*** and requires Environmental Impact Assessment (EIA). Thus, an EIA Report is being prepared for duly submission in EPA, Punjab.

2.2 Environmental Impact Assessment (EIA)

Environmental Impact Assessment (EIA) is a systematic identification and evaluation of potential impacts of proposed projects, plans, programs, or legislative actions relative to the physical, chemical, biological, cultural, and socio-economic components of the total environment.

2.3 Objectives of the EIA

The objectives of the EIA are as follows:

- To assess and establish the existing environmental and socio-economic conditions in the project area,
- To assess the potential environmental or socio-economic impacts of project activities and identify issues of concern,
- To implement and execute environmental safeguards,
- To propose mitigation and monitoring measures that can be incorporated into the design of the project to remove or reduce any damaging effects as far as possible, and to control and monitor residual impacts,
- To facilitate the environmental decision making,
- To facilitate an appropriate follow up process with requirements for monitoring, management, audit, and evaluation,
- To assess the proposed activities to ensure that they comply with the relevant environmental and social regulations and standards, and
- To prepare an EIA report as per the relevant guidelines for submittal to the concerned Environmental Protection Agency (EPA).

2.4 Approach & Methodology

Detailed methodology is discussed as follows:

The project activities were discussed with LCI Limited personnel. Preliminary information was obtained. A Safety Health & Environment Department has been developed and provided an elaborate SHE Management Plan in Line with LCI Limited Policy and Procedures in this report.

2.4.1 Step - 1: Scoping / Data Collection

In this step, information related to the physical, technical, and environmental parameters was collected from the Client and other agencies. Local inhabitants were interviewed in detail to understand the socio-economic conditions, culture, and customs of the area. An extensive literature review was also carried out in this step.

Following information was collected:

- Details of project activities
- Legislative obligations
- Environmental data (both primary and secondary) was collected through physical surveys (Monitoring of Effluent, Air Quality and Drinking Water Quality), field visits and desk reviews including
 - Climatology
 - Topography, Geology
 - Hydrology, Hydrogeology
 - Ecology, flora, and fauna
 - Socio - economic conditions
 - Sensitive Areas

- Land use patterns
- Technical Surveys for project details such as Process, Utilities availability, Liquid Effluent Generation, Air Emissions, Solid waste generation, Transportation mechanisms and Storage of chemicals.

2.4.2 Step - 2: Data Analysis

The data collected in step-1 was analyzed in the framework of Punjab Environmental Protection Act, 1997 (amended 2012).

2.4.3 Step - 3: Environmental Impact Assessment

The data collected in previous phases was used to investigate existing environmental conditions and assess the potential impacts of the proposed project activities. Although the major emphasis remained on the compliance of the client's operations with the provincial legislation, available national and international guidelines were also reviewed, and mitigation measures were developed to ensure environmentally safe practices.

2.4.4 Step - 4: Environmental Impact Assessment (EIA) Report

The finding of the study was communicated to the client in the form of a draft Environmental Impact Assessment (EIA) report. The report has been prepared in accordance with the relevant guidelines of the Punjab EPA.

The discussion and comments of the client regarding the recommendations by the consultants were considered and appropriate modifications were incorporated in the Draft Report to be presented as a Final Report.

2.5 Salient Features of the Report

The EIA report has been organized into ten (10) chapters. *Chapter-1* describes the introduction of proponent, overview of the proposed project activities and location of

the proposed project. **Chapter-2** describes Screening for environmental assessment, **Chapter-3** describes scoping process whereas **Chapter-4** discusses consideration of alternatives in terms of environment, design, technology, site, and cost. **Chapter-5** describes in detail the project and process activities. **Chapter-6** gives the environmental setting of the project area including the physical and socio-economic conditions. **Chapter-7** discusses impact assessment criteria & methodology. **Chapter-8** describes Screening of Potential Environmental Impacts and mitigation measures. **Chapter-9** describes an Environmental Management and Monitoring Program (EMMP), **Chapter-10** describes stakeholder consultation and **Chapter-11** concludes the report.

CHAPTER 3

SCOPING

Chapter Three

SCOPING

3.1. Introduction

The scoping identifies the key issues and impacts that should be further investigated. The scoping describes the spatial and temporal boundaries of the proposed project, important issues and concerns raised during consultation and significant impact factors to be determined.

3.1.1 Spatial and Temporal Boundaries

The proposed expansion will take place within the premises of LCI Polyester Plant located at 30-KM Lahore-Sheikhupura Road, District Sheikhupura which is easily accessible through Lahore-Sheikhupura National Highway N-60. Currently the proposed project is at zero stage. Although the design phase is complete and layout plan has been prepared, but the construction work is not initiated until EPA approval is granted. Land reserved for the project is flattened and empty plain area.

Within 5-km aerial distance of project site various industrial, commercial, and business facilities exist as the proposed construction will be carried out within the boundary of LCI Polyester Plant, Sheikhupura thus the pollution loads during construction phase will be limited to its boundaries. The spatial and temporal boundaries of the proposed project are given in figure 3.1.

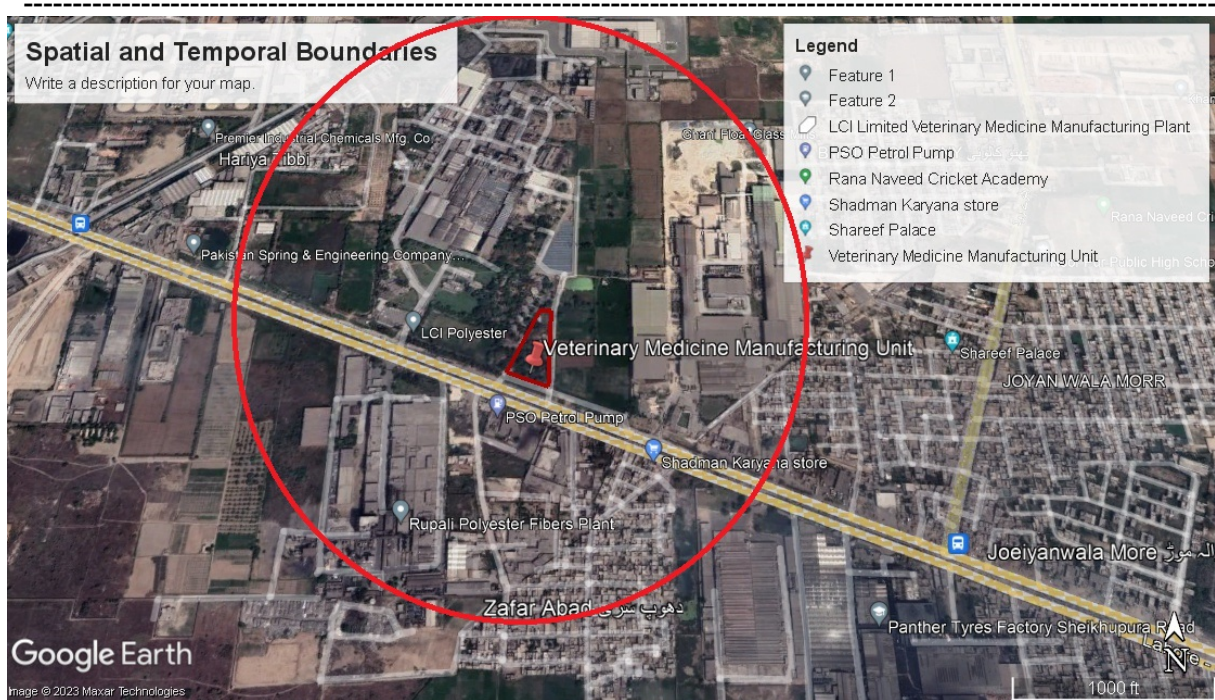


Figure 3.1: Spatial and Temporal Boundaries of the proposed Project

3.1.2 Important Issues and Concern Raised During Consultation

The consultation and scoping meetings were carried out in the project area to disseminate information about the project and its expected impact on the primary and secondary stakeholders. During the survey, number of relevant stakeholders were consulted i.e., local community, government officials and environmental practitioners and experts. After consultation, it was observed that maximum people were in favor of proposed project. On the other hand, very few of the stakeholders seem reluctant in favoring the project as they said that such projects will bring disturbance to their environmental and economic setup. They were afraid of the usage of heavy machinery that will lead to public nuisance i.e., noise and air pollution.

Following concerns of the local community, government departments and environmental practitioners and experts were noted:

- Environmental Monitoring should be carried out regularly.

- Local residents should be preferred for the job opportunities.
- Install wastewater treatment plant in order to avoid water pollution problems as wastewater is one of the main environmental concerns.
- The biodiversity of the area should not be damaged and proper management should be done.
- An effective environmental management plan should be designed and enforced with true spirit.
- Environmental and safety training should be arranged for the workers to avoid any mishap.

3.1.3 Significant impacts and factors to be determined.

Main impacts and factors to be determined are:

- Occupational Health and safety
- Traffic Management
- Hygiene Management
- Job Opportunities for Locals
- Resource Conservation
- Avoid Excessive Water Consumption
- Energy Efficient Techniques must be Adopted.
- Proper Site Restoration after construction
- Emergency Preparedness

CHAPTER 4

ANALYSIS OF ALTERNATIVES

Chapter Four

ANAYSIS OF ALTERNATIVES

4.0. Project Alternatives

This section of the EIA report of the proposed project of the Construction of a LCI Limited Veterinary Medicine Manufacturing Unit at LCI Polyester Fiber Plant, Sheikhupura, explains the alternatives of the project based upon the economic feasibility and environmental sustainability.

An assessment of Project alternatives was carried out to fulfill the requirements of the TOR and IEE/EIA Guidelines. The alternatives were selected through professional experience and consultation with Project stakeholders, including Regulatory Agencies (EPA Punjab), the public and Aboriginal communities. The screening criteria considered potential environmental effects, social acceptability, engineering feasibility and cost. Alternatives further identified during the development of the Project are also assessed. This chapter provides an overview of the alternatives assessment process, the alternatives assessed, and the set of preferred alternatives that are carried into this EIA Report.

4.1. The No Action Alternative

The No Action Alternative in respect to the proposed project implies that the status quo is maintained i.e., no construction/development activity to take place. This option is the most suitable alternative from an extreme environmental perspective as it ensures non-interference with the existing conditions. However, the need for such development is high and the anticipated insignificant environmental impacts

resulting from construction have already been experienced. This option will, however, involve several losses both to the project proponent/land owner. The property will remain under-utilized or neglected. The No Project Option is the least preferred from the socio-economic and partly environmental perspective since if the project is not done: -The economic benefits especially during construction i.e., provision of jobs for skilled and non-skilled workers will not be realized.

- There will be no generation of income by the developer.
- The social-economic status of the area would remain unchanged.
- The local skills would remain underutilized.
- No employment opportunities will be created for locals who will work in the project area.

4.2. Site Alternatives

Relocation option to a different site is an option available for the project implementation. At the moment, there are no alternative sites for the proposed development, as the project is planned in an existing premises of LCI Limited Polyester Fiber Plant, located at 30-KM Lahore-Sheikhupura Road, Sheikhupura. This means that the proponent has to look for the land if relocation is proposed. Looking for the land, other than the existing owned facility of proponent, to accommodate the scale and size of the project and completing official transaction on it may take a long period. In addition, it is not a guarantee that such land would be available. It's also worth noting that the said project is already underway in terms of seeking development approvals in various government departments.

The project proponent would spend another long period of time on design and approval of the plans by the relevant government departments. The project design and planning before the stage of implementation would call for costs already incurred in the proposed development i.e., whatever has been done and paid to date would be counted as a loss to the proponent. In consideration of the above concerns and assessment of the current proposed site, relocation is not a viable option. From the analysis above, it becomes apparent that Site Relocation is not the appropriate alternative to the local people and proponent.

4.3. Design / Technology Alternative

The project envisages establishing a state-of-the-art manufacturing facility for producing Veterinary Medicines, both oral solid and liquid and liquid injections. Veterinary medicines, also known as animal health products or veterinary drugs, are substances specifically developed and used for the diagnosis, treatment, prevention, or control of diseases and health conditions in animals. They are similar to human medicines but formulated and approved for use in various animal species, including livestock, companion animals (such as dogs and cats), horses, poultry, and aquaculture species. Following mentioned is the outline of the technology being employed by LCI Limited Animal Health Business for the Manufacturing of Veterinary Medicines:

- **Formulation and Mixing:** Animal health product manufacturing often involves the formulation and mixing of active pharmaceutical ingredients (APIs), excipients, and other additives. Various technologies, such as high-

shear mixing, fluid bed granulation, or roller compaction, can be used to ensure uniform distribution and consistent dosage forms.

- **Granulation and Tableting:** Granulation is a process that involves agglomerating fine powder ingredients to form granules, which are then compressed into tablets. Different techniques, including wet granulation, dry granulation, or direct compression, may be employed depending on the specific product requirements.
- **Encapsulation:** Encapsulation is the process of enclosing the active ingredients or formulations within a capsule shell. This technology can be utilized for oral administration of veterinary medicines, allowing for precise dosing and protection of active substances.
- **Sterile Manufacturing:** Sterile manufacturing is required for products like injectables or ophthalmic preparations. Technologies such as aseptic processing, filtration, lyophilization (freeze-drying), and terminal sterilization (e.g., autoclaving) may be employed to maintain sterility throughout the manufacturing process.
- **Lyophilization:** Lyophilization, or freeze-drying, is a process used to remove water from pharmaceutical products while preserving their integrity. It is

commonly used for products that require long-term stability and reconstitution before use.

- **Packaging:** Packaging technologies play a crucial role in ensuring product stability, protection, and compliance. This can involve blister packaging, bottle filling, sachet filling, vial filling, or specialized packaging for sterile products. Automation and quality control systems are often integrated into packaging lines to ensure accurate labeling, batch traceability, and product integrity.
- **Quality Control and Testing:** Manufacturing facilities typically include quality control laboratories equipped with various analytical instruments and techniques to test the identity, purity, potency, and safety of the finished products. This may involve techniques such as high-performance liquid chromatography (HPLC), mass spectrometry (MS), spectroscopy, microbiological testing, and stability testing.

4.4. Environmental Alternatives

As already explained in the above section, the proponent is planning to install the state-of-the-art technology for the production of veterinary medicines, with integrated noise, water and air pollution controls. The liquid waste will be treated in the specifically designed Packaged Type Wastewater Treatment Plant which is part of the proposed project scheme. The solid waste will be managed by the existing waste management vendor of LCI Limited. Furthermore, no protected, archaeological, cultural and / or religious places are present around the project site. There is no

surface water body present in the form of stream and river. The project site is linked with all major cities, through a network of national Highways and Motorways. Based upon the aforementioned characteristics, the proposed project is environmentally friendly and create no or minimal disturbance to the baseline environmental conditions of the District Sheikhupura.

4.5. Economic Alternatives

The proposed project of LCI Limited Animal Health Sciences is planned within the existing premises of LCI Polyester Fiber Plant, 30-KM Lahore-Sheikhupura Road, District Sheikhupura. The project site is linked with all major cities, through a network of national Highways and Motorways. This strategic location of the proposed project reduces the cost of the transportation of the raw materials and the final products. Furthermore, the project will also enhance the social well-being of the area by providing job opportunities to the skilled and unskilled workers residing in the nearby communities.

4.6. Conclusion

After the detailed analysis of the alternative options for the proposed project, the planned locality, i.e., LCI Limited Polyester Fiber Plant, and the proposed project of construction of LCI Animal Health Business is environmentally friendly, socially acceptable, financially viable and sustainable in all the aspects like; Site setting, technology being utilized, and environmental & economic prospects.

CHAPTER 5

PROJECT DESCRIPTION

Chapter Five

DESCRIPTION OF THE PROJECT

5.1 Objectives of Project

The proposed project has following objectives to meet:

- To comply with country environmental and quality legal standards
- To ensure the supply of high-quality product
- To fulfil local/ international market requirements for Veterinary Medicines
- To provide job opportunities for skilled and unskilled workers preferably to the locals

5.2 Location and Site Layout of the project

The proposed construction will take place within the premises of LCI Limited Polyester Fiber Plant, Sheikhupura on 30-KM Lahore-Sheikhupura Road. Google Earth location Map and layout of the proposed site are provided as ***Annexures G and H.***

5.3 Land use on the site

The proposed project site is located within the boundary of LCI Polyester Fiber Plant, Sheikhupura which itself is the industrial area and accommodates following different types of industries:

Types of industries in Sheikhupura	
Manufacturing Services	Plastic Industry
Warehousing	Pharmaceuticals
Information Technology	Chemicals
Textile	Electronics

Light Engineering	Food & Beverages
Auto parts	Mobile Manufacturing

The proposed site is an empty plot, within the premises of LCI Polyester Fiber Plant, Sheikhupura. The site can be accessed through the main Lahore-Sheikhupura National Highway N-60. Nutrico Morinaga Private Limited is located on the Northern Side of the Project. Whereas the N-60 is on the Southern Side of the Project

Nearby industries include M/s Rupali Polyester Fiber Plant, M/s Panther Tires Factory Sheikhupura, M/s Nestle Pakistan Limited, M/s Ishtiaq Steel Corporation, M/s Fatima Fertilizers Limited, M/s WBM Private Limited, M/s Pakistan Spring and Engineering Company, and M/s Ghani Float Glass Mills etc.

Nearby residential areas include Moza Bal, Bhatti Dhilwan, Zafar Abad Town, Baway di Kutiya and Hariya Tibbi etc.

5.4 Road access

The primary road to access the project site is Lahore-Sheikhupura National Highway N-60.

5.5 Vegetation features of the site

The scattered vegetation and trees predominantly of Keekar can be seen on and around the project site. Other than this, no particular vegetation exists on or near the project site.

5.6 Cost and Magnitude of operation

The estimated cost of the project is approx. 600 Million PKR.

5.7 Schedule of implementation

The proposed project will be completed in approximately 1.5-2.0 years after getting environmental approval from EPA Punjab.

5.8 Description of the project

5.8.1 General

Lucky Core Industries, Limited, an Animal Health Plant is operating as Veterinary Medicine Manufacturing Unit and manufactures Oral Powder, Oral Liquid, and Liquid Injection. The details of the proposed project of “Construction / Installation of Veterinary Medicine Plant” at 30-KM Lahore Sheikhupura Road, District Sheikhupura” are as follows.

5.8.2 Plant Building

The Animal Health Plant building will consist of four (4) floors and the outside front area is 30-40 feet width and surrounding three (3) sides are 20-25 feet each width. Each floor has a minimum of 10 feet height approx. The details of the building floors have been mentioned below:

5.8.2.1 First Floor

It will consist of an Oral Liquid Section, Oral Powder section, Quality Control, Raw Material, Packing Material and Finished Goods Store. The height of stores will be approx., 20-27 feet and covers 2 floors 1st and 2nd from one side and there would be eight (8) feet wide corridor between the stores and process areas.

5.8.2.2 Second Floor

It will consist of technical floor, admin block, retain samples and Stores. Access will be Provided to the technical floor from Admin Block all Utility is ready for Liquid and powder areas at this technical floor

5.8.2.3 Third Floor

It will consist of Liquid injection section and Micro Lab, R&D, 8 feet wide corridor between liquid injection section and QC, Micro Lab and R&D.

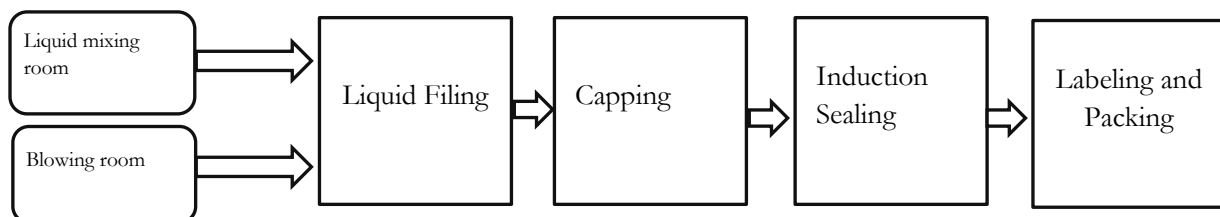
5.8.2.4 Fourth Floor

It will consist of the technical floor and Cephalosporin Injection Section. There would be two (2) cargo Lifts; 1st in production and 2nd is accessed from outside the production building to Cephalosporin Injection Section.

5.8.3. Manufacturing Process

5.8.3.1.Oral Liquid Section

The detail process proposed to be carried out the Oral Liquid Section will be:

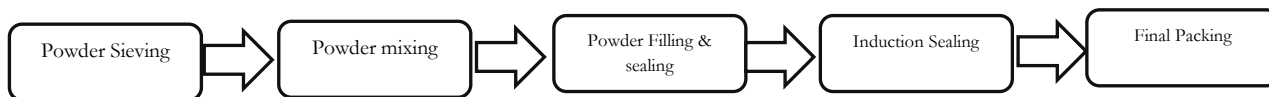


Following mentioned is the room the list and type of the machinery proposed to be installed in that room:

Room list	Machine list
Material Staging	Pallets
Liquid Manufacturing room	S.S Manufacturing, storage tanks; transfer pump and loop system.
Bottle Blowing room	Blowing machine with vacuum pump
Liquid filling room	Filling line consists of filling, capping machine
Packing Hall	Automatic Induction sealer, leakage testing machine, auto labeling machine, conveyer belt, 2D Bar Coding printing machine for Labelling and Primary Carton.

5.8.3.2.Oral Powder Section

The process proposed to be carried out in the Oral Powder Manufacturing Section, list of rooms and the machineries are as following:



Room list	Machine list
Powder Mixing room	Double cone mixer, Powder Sifter & tray dryer
Powder Filling room	Pouch Filling machine
Packing hall	Labeling machine, Conveyor Belt
Equipment Washing room	Sink and eye washer

5.8.3.3.Stores

Raw material stores will have height of approx. 20 feet with MS powder coated pallet

Racks:

Room list	Machine list
Receiving room	Dust collector
Quarantine room	Transfer window to sampling
Sampling room	Sampling booth with weighing balance
Rejection room	----
Dispensing room	Dispensing booth, weighing balance 1kg to 150 kg and other for less than 1 kg weight
Main hall	MS powder coted racks

The Packing Material Store will have height approx. 20 feet with MS powder coted pallet Rack

Room list	Machine list
Receiving area	-----
Reject room	-----
Main Hall	MS powder coted racks

Finished Goods Store will have the height approx. 20 feet with MS powder coted pallet Rack

Room list	Machine list
Dispatch area with loading Bay	-----
Return recall room	-----
Lift room	4*4 lift
Main Hall	MS powder coted racks

5.8.3.4. Technical Areas and Machine List

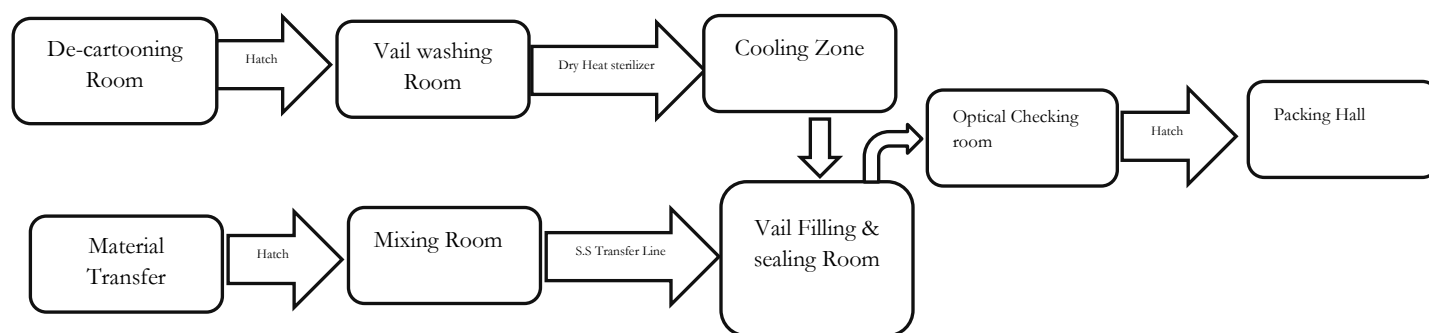
The first technical floor will consist of DX base HVAC and ducting systems for air compressors and also the pipeline of all utility area. The details of which are following:

- MTS panel with MCCB breaker installation as per requirement
- All duct with full cladding overhead installation
- Eight (8) Split type DX bas HVAC use for the Oral Liquid and Oral Powder and RMS and PMS and FGS.
- Two Air Compressors of 30 KW and 20 KW and air vessel (Capacity approx. 2 cubic meter)
- Cables tray structure for Power Cables
- HVAC drain system.
- Loop System for RO and WFI water
- Steam Line with Cladding

- Telephone Exchanges system
- Internet Connectivity (LAN connectivity system)
- UPS/Backup systems (for critical equipment's)

5.8.3.5.Liquid Injection Manufacturing Section

Following mentioned is the manufacturing process of Liquid Injections at the 3rd floor and right side of building:



The list of machines proposed to be installed in the Liquid Injection Manufacturing Section are mentioned below:

Room list	Machine list
DE cartooning room	1 hatch between Decanting and washing room
Vail washing room	Ultrasonic vail washing machine, Dry heat sterilizer, terminal autoclave, cooling zoon trolley
Three (3) buffer 4*4	For entrance in washing area
Tow (2) buffer 4*4	For entrance in manufacturing area

Manufacturing/mixing room	Two tank S.S double jacket with high-speed mixer, transfer pump, Hatch, auto clave
Cooling zone area	Cooling zoon trolley, dry heat sterilizer 2 nd door and 1 st one is in washing room
Vail filling room	One (1) Vail filling machine cover with laminar follow hood
Vail Sealing room	Vail sealing machine connect with vail filling and turn table
Five (5) buffer 4*4	One buffer is common and two buffer for entrance and two for exit.

5.8.3.6. Quality Control Lab

The quality control labs proposed to be installed at the 3rd floor of the building. The rooms in the quality control lab and the list of machines proposed to be installed are mentioned below:

Room list	Machine list
QC Main Hall	Analytical Balance, oven, hot and cold incubator, electrical starrer, hot plat
Instrument room	Fume hood, FTIR, Karl Fischer-Germany, Polari meter, Water Bath, viscometer etc.
HPLC room	HPLC and systems

Stability room	Stability chambers
Office	-----
Gas chromatography room	Gas chromatography
Atomic absorption room	Atomic absorption

5.8.3.7. Microbiology Lab

Establishment of a microbiology lab is also the part of the proposed project. The lab would be located on the 3rd Floor, of the building and will have following rooms and machines:

Room list	Machine list
Three 3 Buffer	
Instrumentation room	Hot incubator, cold incubator, colony counter Auto clave, refrigerator
Media preparation room	Filtration assembly
Sterility room	Bio safety cabinet

5.8.3.8. Retained sample

Retained sample rooms will have MS powder coated racks for the samples of all medicine.

5.8.3.9. R&D Department

The R&D department will have small level machines, used for trail batches.

Room list	Machine list
R&D Hall	Double Cone mixer 5kg, granulator 5kg, oven, mixer silver san 10 liter with high-speed motor, and some QC equipment's

5.8.3.10. 2nd Technical Floor

2nd Technical floor Details are follows

- RO plant (DRAP Regulations)
- WFI Plant (Double Distillation Plant)
- MTS panel with MCCB breaker installation as per requirement
- All duct with full cladding overhead installation
- Eight (8) Split type DX bas HVAC use for the Liquid Injection Filling and Liquid Injection Washing and Manufacturing, Microbiology Lab, and Cephalosporin
- Hepa Filter (H13/14) install at all terminal of Injection and Micro Lab HVAC.
- Cables tray structure for Power Cables

5.8.4. Cephalosporin Section

The Cephalosporin Section will be on the 4th floor and adjacent to the 2nd Technical floor and on the left side of the building, the list of rooms and machines are follows:

Room list	Machine list
De-cartooning room	Hatch (Transfer window)
Vail/bottle washing	Washing machine, dry heat Sterilizer, terminal Auto clave up to 20lits
Three (3) Buffers 4*4	For entrance and Exit
Mixing room	Double cone mixer
Filling room	Vail filling machine and sealing
Packing Hall	Labeling machine, conveyer belt

5.8.5. Utility Equipment's / Systems

- Power Transformer up to 630 kVA
- ATS main panel (up to 630 KVA) with PFI panel
- Electrical wiring structure
- Earthling pit's
- Sub Panels /DB, s
- Generator up to 1000 KVA and 100 KVA
- Steam generator 1,000 kg
- Two Screw Air Compressor 30kw and 20kw
- HVAC (Split type DX Base with G4 and F9 and HEPA H13 Filters)
- WFI Plant (as per DRAP regulations)

-
- RO Plant (as per DRAP regulations)
 - ETP Plant (package type ETP having capacity of 4-meter cube)
 - Water turbines (Capacity: 3700 GPH)
 - Cargo lift (There are two cargo lifts one inside of the building and the second one is at the outside of the building)
 - Twenty splits Air conditioner
 - Hydrogen gas cylinder (As per requirement for lab testing)
 - Nitrogen gas cylinder (As per requirement for lab testing & injection)
 - Acetylene gas cylinder (As per requirement for lab testing)

5.8.6. Raw material

The basic raw material which will be utilized to manufacture oral liquid & solid veterinary medicines and liquid injections have been mentioned below:

ARMA00001	LEVAMISOLE HCL BP
ARMA00002	OXYCLOZANIDE BP
ARMA00003	OXFENDAZOLE BP
ARMA00004	OXFENDAZOLE -GUILIN
ARMA00005	Vitamin A Palmitate
ARMA00006	Vitamin D3 Soluble
ARMA00007	Vitamin E Liquid
ARMA00008	Meloxicam
ARMA00009	Meglumine
ARMA00010	Sulphadimidine Sodium
ARMA00011	OXFENDAZOLE

ARMA00012	Triclabendazole
ARMA00013	Sulphadiazine Sodium
ARMA00014	Trimethoprim BP2010 (Micronized)
ARMA00015	Gentamycin Sulphate Sterile EP4
ARMA00016	Toldimfos Sodium
ARMA00017	Doxycycline Hyclate
ARMA00018	Tylosin Tartarate
ARMA00019	Colistin Sulphate
ARMA00020	Neomycin Sulphate
ARMA00021	Chlortetracycline HCL
ARMA00022	Lincomycin HCL - Bio Lab
ARMA00023	Spectinomycin Dihydrochloride Pentahydra
ARMA00024	Amoxicillin Trihydrate - Bio Lab
ARMA00025	Vitamin E Acetate - Bio Lab
ARMA00026	Levamisole HCL
ARMA00027	Oxyclozanide
ARMA00028	Cobalt Chloride
ARMA00029	Albendazole
ARMA00030	Doramectin
ARMA00031	Lincomycin HCL
ARMA00032	Spectinomycin HCL
ARMA00033	Amoxicillin Trihydrate
ARMA00034	Vitamin E Acetate
ARMA00035	Spiramycin Adipate
ARMA00036	Erythromycin Thiocyanate
ARMA00039	Doramectin
ARMA00040	Sulphadimidine Sodium
ARMA00041	Meloxicam
ARMA00042	Meglumine

ARMA00043	Sulphadiazine Sodium
ARMA00044	Trimethoprim BP2010 (Micronized)
ARMA00045	Vitamin A Palmitate
ARMA00046	Vitamin D3 (Inj.)
ARMA00047	Vitamin E Liquid
ARMA00048	Bromhexine HCl
ARMA00049	Tartaric Acid
ARMA00050	Florfenicol IHS
ARMA00051	Enrofloxacin Base CVP
ARMA00052	Toldimfos Sodium
ARMA00054	Vitamin C
ARMA00055	Amprolium HCL
ARMA00056	Vitamin A acetate
ARMA00057	Vitamin D3 (Powder grade)
ARMA00058	Vitamin E Acetate
ARMA00059	Vitamin K3
ARMA00060	IVERMECTIN B.P
ARMA00061	Flunixin Maglumine
ARMA00062	Tilmicosin Phospahte
ARMA00063	Vitamin B1 HCl
ARMA00064	Vitamin B2(Riboflavin Sodium Phosphate
ARMA00065	Vitamin B6 HCl
ARMA00066	Nicotinamide
ARMA00067	D-Panthenol
ARMA00068	Vitamin B12
ARMA00069	Amoxicillin Trihydrate-Selmore
ARME00001	SODIUM METABISULPHITE BP
ARME00002	DISODIUM EDITATE BP
ARME00003	SODIUM CITRATE BP

ARME00004	CITRIC ACID BP
ARME00005	SODIUM PROPYL HYDROXYBENZOATE (Nipasol)
ARME00006	TARTRAZINE
ARME00007	COBALT SULPHATE HEPTAHYDRATE
ARME00008	POLYSORBATE 80 BP
ARME00009	KAOLIN LIGHT NATURAL BP
ARME00010	XANTHAN GUM USP/NF
ARME00011	POLYOXYL 40 STEARATE - USP/NF
ARME00012	POLYETHYLENE GLYCOL 8000 - USP/N
ARME00013	COLLOIDAL SILICONE DIOXIDE - USP/N
ARME00014	SORBIC ACID - USP/NF
ARME00015	METHYL HYDROXYBENZOATE
ARME00016	SODIUM SELENATE BP
ARME00019	ALUMINIUM MAGNESIUM SILICATE
ARME00020	PROPYL HYDROXYBENZOATE
ARME00021	Butylated Hydroxy Anisole (BHA)
ARME00022	Benzyl Alcohol
ARME00023	Crodamol Oil
ARME00024	Dimethyl Formamide
ARME00025	Propylene Glycol
ARME00026	XANTHAN GUM Cancell
ARME00027	Methyl Paraben Sodium
ARME00028	Propyl Paraben Sodium
ARME00029	Titanium Dioxide
ARME00030	Citric Acid Monohydrate Cancell
ARME00031	Tween - 80
ARME00032	Glycerin
ARME00033	SODIUM METABISULPHITE

ARME00034	Sodium Hydroxide
ARME00035	Tween - 80 AR Grade
ARME00036	Water for Injection (q.s.t)
ARME00037	Ethylene Diamine tetra Acetic (EDTA)
ARME00038	Monoethanolamin
ARME00039	Aerosil 200
ARME00040	Dextrose Anhydrous (Q.S)
ARME00041	Aerosil 200 - Bio Lab
ARME00042	Dextrose Anhydrous (Q.S) - Bio Lab
ARME00043	Raspberry Red Colour
ARME00044	Cloental Base
ARME00045	Sodium Benzoate
ARME00046	P.E.G. -400
ARME00047	Sodium Selenite
ARME00048	Flavour (Vanilla)
ARME00049	Blue Color
ARME00050	Citric Acid Anhydrous
ARME00053	Benzyl Alcohol
ARME00054	P.E.G. -400
ARME00055	Propylene Glycol
ARME00056	Dimethyl Formamide
ARME00057	Gentamycin Sulphate Sterile EP4
ARME00058	Sodium Metabisulphite
ARME00059	Methyl Paraben Sodium
ARME00060	Propyl Paraben Sodium
ARME00061	Ethylene Diamine Tetra Acetic (EDTA)
ARME00062	Sodium Hydroxide
ARME00063	Tween - 80 AR Grade
ARME00064	Monoethanolamin

ARME00065	Butylated Hydroxy Anisole (BHA)
ARME00066	Crodamol Oil
ARME00067	Sodium Selenite
ARME00068	Sorbitol Liquid 70% (NON CRYSTALLIZING)
ARME00069	Dimethyl Sulfoxide (DMSO)
ARME00070	Glacial acetic acid
ARME00071	Sodium Bicarbonate
ARME00072	Sodium Saccharine
ARME00073	Flavour (Orange)
ARME00074	Sodium Chloride
ARME00075	Gluten 60%
ARME00076	Sodium Formaldehyde Sulfoxylate
ARME00077	Diethanolamine
ARME00078	Phenol
ARME00079	Propyl Gallate
ARME00080	Butylated Hydroxy toluene (BHT)
ARME00081	Miglyol

5.8.3 Products, by-products

The list of products and byproducts would be following:

PRODUCT LIST

Veterinary Oral Liquid (General)

S.#	PRODUCT NAME	PACK SIZE
1	Alba 10 Plus Suspension. Contains: - Albendazole..... 10% w/v. Sodium Selenite...0.035% w/v.	100ML, 500ML & 1L
2	Albasan Plus 2.5 Suspension. Contains: - Albendazole 2.5% w/v. Closantel.....0.5% w/v. Cobalt Chloride 0.075 % w/v.	120ML,250ML 500ML, 1L & 2L
3	Nilverm Drench. Contains: - Levamisole HCl B.P. (vet) 1.5%w/v.	100ML, 250ML & 1L

4	Nilverm Plus Drench. Contains: - Levamisole HCl B.P. (vet) 1.5% w/v. Cobalt Sulphate heptahydrate B.P. (vet) 0.382% w/v.	100ML, 250ML & 1L
5	Nilzan Drench. Contains: - Levamisole HCl B.P. (vet) 1.5% w/v. Oxyclozanide B.P. (vet) 3.0%w/v.	100ML, 250ML & 1L
6	Nilzan Plus Drench. Each Liter contains: - Levamisole HCl B.P. 15gm Oxyclozanide B.P. (vet) 30gm Cobalt Sulphate heptahydrate 3.82gm	100ML, 250ML & 1L
7	Oxfenda SC Drench Contains: - Oxfendazole BP (Vet) 2.265%w/v. Elemental Selenium 0.05%w/v. (as Sodium Selenate Anhydrous). Elemental Cobalt 0.175%w/v. (as Cobalt Sulphate Heptahydrate).	100ML, 450ML & 1L

8	Oxfenox Plus Suspension. Each ml contains: - Oxyclozanide.....6.25%w/v. Oxfendazole.....2.265%w/v. Cobalt Chloride....0.02%w/v.	100ML, 500ML & 1L
9	Systamex Drench. Each Liter contains: - Oxfendazole B.P. (vet) 2.265gm	100ML & 450ML
10	Triclev 8.75 Drench. Contains: - Levamisole HCl.....3.75% w/v. Triclabendazole... 5.0% w/v.	100ML, 500ML & 1L
11	Tryton Suspension. Each 100ml contains: - Trimethoprim..... 8gm. Sulphadiazine 40gm.	100ML,250ML, 500ML, 1L & 5L

12	Vorcid Suspension. Each liter contains: - Oxfendazole... 22.65gm. Triclabendazole... 85gm.	100ML,150ML, 250ML, 500ML, 1L & 2.5L
13	Zanil Drench. Contains: - Oxyclozanide B.P. (vet) 3.4% w/v.	100ML, 250ML & 1L
14	Feniconil Oral Solution. Each ml contains: - Florfenicol 230mg. (As per Innovator's Specification*)	100ML, 500ML & 1L
15	Enco-Stin Oral Solution. Each 100ml contains: - Enrofloxacin 10gm. Colistin Sulphate 50MIU. (As per Innovator's Specification*)	100ML, 500ML & 1L

16	Vita C Oral Solution. Each ml Contains: Vitamin C..... 250 mg. (As per Innovator's Specification*)	100ML, 500ML & 1L
17	Enroxin Solution Oral Solution. Each ml Contains: Enrofloxacin 200 mg.	100ML, 500ML & 1L
18	Zolectin Drench. Each 100 ml Contains: Triclabendazole 12 gm. Ivermectin.....0.2 gm Albendazole 10 gm	100, 250, 500and 100 ml ml
19	Triclev Drench 120/75 mg. Contains: - Triclabendazole.....120 mg. Levamisole HCl.....75 mg.	100, 250, 500and 100 ml ml

20	Ecton Drench Each ml contains:- Ivermectin 10 mg	
21	Brovitox Oral Solution. Each ml contains:- Toltrazuril 2.5mg	100, 250, 500, 1000 ml
22	Fexflor Oral Solution. Each ml contains:- Florfenicol 200mg	100, 250, 500, 1000 ml
23	Supplitol Oral Solution. Each ml contains:- Calcium Chloride Heptahydrate..... 2 mg Magnesium Chloride Hexahydrate.....4 mg Potassium Chloride.....8 mg Sodium Chloride.....120 mg Cyanocobalamin.....0.025 mg	100, 250, 500, 1000 ml

	Sodium Lactate.....42.7 mg	
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PRODUCT LIST

Veterinary Oral Dry Powder (General)

S.#	PRODUCT NAME	PACK SIZE
1	Doxityl Water Soluble Powder. Each 100gm contains: - Tylosin Tartrate.....20gm. Doxycycline.....40gm.	100gm,250gm, 500gm,1kg, 5kg & 25kg
2	Neo-Stin Water Soluble Powder. Each kg contains: - Colistin Sulphate.....4gm. Neomycin Sulphate....70gm. Chlortetracycline HCl....80gm.	100gm,250gm, 500gm,1kg, 5kg & 25kg

3	Co-Spira Water Soluble Powder. Each kg contains: - Spiramycin adipate.....75gm. Lincomycin HCl 25gm.	100gm,250gm, 500gm,1kg, 5kg & 25kg
4	Erythroprim-S Water Soluble Powder. Each kg contains: - Erythromycin Thiocyanate 100gm. Trimethoprim 20gm Sulphadiazine (as Sodium) 100gm	100gm,250gm, 500gm,1kg, 5kg & 25kg
5	Bromotarc Water Soluble Powder. Each 100gm contains: - Bromhexine HCl.....1gm. Tartaric acid 15gm.	100gm,250gm, 500gm,1kg, 5kg & 25kg
6	Ampromed Oral Powder. Each 100 gm contains:-	100gm,250gm, 500gm,1kg, 5kg & 25kg

	Amprolium HCl 90 gm	
7	Neosulph Oral Powder. Each 100 gm contains:- Neomycin Sulphate 72 gm	100gm,250gm, 500gm,1kg, 5kg & 25kg
8	Dox-Tyl Water Soluble Powder. Each 100gm contains:- Tylosin Tartrate B.P 20gm Doxycycline Hyclate 40gm Colistin Sulphate... 10gm Bromhexine HCl..... 2gm	100gm,250gm, 500gm,1kg, 5kg & 25kg
9	Vitaka Water Soluble Powder. Each Kg contains:- Vitamin A.....20MIU Vitamin D ₃ 2MIU	100gm, 250gm, 500gm, 1kg

	Vitamin E.....6000 mg Vitamin K ₃ 5000 mg Vitamin C.....70 gm	
10	Linoxin 4.4 % Powder 5 Kg. Each 100 gm contains:- Lincomycin as HCl..... 4.4 gm	5 Kg
11	Doxyclate-S Oral Powder. Each 100 gm contains:- Doxycycline Hyclate 50gm	100gm,250gm, 500gm,1kg, 5kg & 25kg
12	Droxil Oral Powder. Each gm contains: - Tylosin Tartrate.....200mg.	100, 250, 500, 1000 ml

	Doxycycline Hyclate.....250mg.	
13	Tyfloz Oral Powder. Each gm contains: - Tylosin Tartrate.....1000mg.	100, 250, 500, 1000 ml
14	Coxolin S Oral Powder. Each gm contains: - Colistin Sulphate...600,000 IU.	100, 250, 500, 1000 ml
15	Lincamox-S water Soluble Powder. Each gm contains: - Amoxicillin as Tryhydrate 200 mg. Lincomycin as HCl.....88 mg Spectinomycin Dihydrochloride Pentahydrate eq. to Spectinomycin.....88 mg Vitamin E.....30 mg	100, 500 gm 1, 2,3 5 Kg

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PRODUCT LIST

LIQUID INJECTABLE (SVP) VET.

S.#	PRODUCT NAME	PACK SIZE
1	Dectron Liquid Injection Each ml contains: - Doramectin.....10mg. (As per Innovator's Specification)	10ML
2	Dectron Liquid Injection Each ml contains: - Doramectin.....10mg. (As per Innovator's Specification)	20ML
3	Dectron Liquid Injection Each ml contains: - Doramectin.....10mg. (As per Innovator's Specification)	50ML
4	Dectron Liquid Injection Each ml contains: - Doramectin.....10mg. (As per Innovator's Specification)	100ML
5	Disulf Liquid Injection Each ml contains: - Sulphadimidine Sodium 333mg. (BP (Vet) Specification)	100ML

6	Genton 5% Liquid Injection Each ml contains: - Gentamycin Sulphate equal 50mg Gentamycin base. (USP Specification)	50ML
7	Genton 5% Liquid Injection Each ml contains: - Gentamycin Sulphate equal 50mg Gentamycin base. (USP Specification)	100ML
S.#	PRODUCT NAME	PACK SIZE
8	Genton 10% Liquid Injection Each ml contains: - Gentamycin Sulphate equal 100mg Gentamycin base. (USP Specification)	50ML
9	Genton 10% Liquid Injection Each ml contains: - Gentamycin Sulphate equal 100mg Gentamycin base. (USP Specification)	100ML
10	Melonac Injection Each ml contains: - Meloxicam 7.5mg (BP Specification)	50ML
11	Melonac Injection Each ml contains: - Meloxicam 7.5mg (BP Specification)	100ML
12	Tryton Injection Each ml contains: - Sulphadiazine (as Sodium) ... 400mg Trimethoprim 80mg	10ML

	(BP Specification)	
13	Tryton Injection Each ml contains: - Sulphadiazine (as Sodium) ... 400mg Trimethoprim 80mg (BP Specification)	50ML
14	Tryton Injection Each ml contains: - Sulphadiazine (as Sodium) ... 400mg Trimethoprim 80mg (BP Specification)	100ML
S.#	PRODUCT NAME	PACK SIZE
15	V Sel Liquid Injection Each ml contains: - Vitamin E 100mg Sodium Selenite 0.5mg (As per Innovator's Specification*)	50ML
16	V Sel Liquid Injection Each ml contains: - Vitamin E 100mg Sodium Selenite 0.5mg (As per Innovator's Specification*)	100ML
17	VAD3 Liquid Injection Each ml contains: - Vitamin A 80,000IU Vitamin D3 40,000IU Vitamin E 20mg (As per Innovator's Specification*)	50ML
	VAD3 Liquid Injection Each ml contains: -	

18	Vitamin A 80,000IU Vitamin D3 40,000IU Vitamin E 20mg (As per Innovator's Specification*)	100ML
19	Dayfos Liquid Injection Each ml contains:- Toldimfos Sodium.....100 mg (As per Innovator's Specification*)	50ML
20	Endecton Liquid Injection Each ml contains:- Ivermectin 10 mg (As per Innovator's Specification*)	
21	Endecton Liquid Injection Each ml contains:- Ivermectin 10 mg (As per Innovator's Specification*)	
21	Tricure Liquid Injection Each ml contains:- Flunixin as Meglumine ...10 mg (As per Innovator's Specification*)	50 ml
22	Tricure Liquid Injection Each ml contains:- Flunixin as Meglumine ...10 mg (As per Innovator's Specification*)	100 ml
23	Endecton-Clo Injection Each ml contains:- Ivermectin 10 mg Clorsulan.....100 mg (As per Innovator's Specification*)	10 ml
24	Endecton-Clo Injection 50 ml	50 ml

	Each ml contains:- Ivermectin 10 mg Clorsulan.....100 mg (As per Innovator's Specification*)	
25	Endecton-Clo Injection 100 ml Each ml contains:- Ivermectin 10 mg Clorsulan.....100 mg (As per Innovator's Specification*)	100 ml
26	Endecton Injection Each ml contains:- Ivermectin 10 mg (As per Innovator's Specification*)	10 ml
27	Amoxi-Vet Injection Each ml contains:- Amoxycyclin as Tryhydrate 150 mg (B.P Specification*)	50 ml
28	Amoxi-Vet Injection Each ml contains:- Amoxycyclin as Tryhydrate 150 mg (B.P Specification*)	50 ml
29	Multivor Injwction Each ml contains: - Vitamin A (Palmitate) 15000I.U Vitamin D3 (cholecalciferol) 25mcg Vitamin E (Alpha Tcopheryl Acetate) 20mg Vitamin B1 (Thiamine Hydrochloride) 10mg Vitamin B2 (Riboflavine Sodium Phosphate) 5mg Vitamin B6 (Pyridoxine hydrochloride) 3mg Nicotinamide 35mg	100 ml

	Dexpanthenol 25mg Vitamin B12 (Cynocobalamine) 25mcg Reg. Pack Size:100 ml (As per Innovator's Specifications*)	
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5.8.4 Power consumption

The electricity required for the construction of the proposed project would be obtained through diesel fired generators of 1000KVA. The electricity consumption during the construction phase would be around 7,000 KWh. Whereas, in the operational phase of the project, only 550 KWH energy would be consumed.

5.9 Restoration and rehabilitation plans

The areas underwork would be restored after construction and installation activities to their original condition with the maximum possible effort. The restoration work comprises the removal of temporary construction work/labor camp and removal of any fence installed, levelling of areas (wherever required) etc. The following procedures should be adopted for the restoration of the site:

- All temporary construction built for the site development would be removed.
- Sites for construction camps would be restored to their previous conditions as much as possible.
- All the toxic and hazardous chemicals/materials will be completely removed from the site.

-
- Efforts will be made to completely remove the oils and chemical spills during the construction.
 - Any debris from construction activities would be removed properly from the site.
 - All fencing and gates will be removed, and pits will be backfilled.
 - The whole of the site will be covered with the original soil to the original levels and grades and vegetation will be done, where required.

Finally, after the completion of the restoration process, the proponent and the supervisory consultants would inspect the site and the proponent would give the restoration clearance to the contractor.

CHAPTER 6

DESCRIPTION
OF
ENVIRONMENT

Chapter Six

DESCRIPTION OF ENVIRONMENT

6.1 Introduction

An environmental baseline study is intended to establish a database against which potential impacts can be predicted and managed later. The prevailing environmental conditions need to be assessed before the preliminary stages of planning and execution of the project. The EIA of the proposed project covers a comprehensive description of the project area. The existing environmental conditions of Sheikhupura District and around the proposed project have been considered with respect to physical, biological, and socio-economic aspects. A site visit was conducted to collect environmental data on physical, biological and socioeconomic parameters. Furthermore, interviews were also taken with the public to seek the public opinion on the implementation of the proposed project. The below section provides an overview of the current situation of the Sheikhupura district with respect to Physical, Ecological, Socioeconomic Environment. Moreover, this chapter has also highlighted the quality of life of people of the project area.

6.2 Study Parameters

The information – data for use in the report has been secured from two main sources: published literature and field surveys. Published literature was reviewed to collect available environmental information about Sheikhupura including climate, ecological, biological, socioeconomic, cultural conditions, and land use. A site visit was conducted to survey the field area and to collect environmental data on physical, biological, and socio-economic parameters. Further, consultations were held with the public and

stakeholders of the project area to pursue the public opinion on the enactment of the proposed project.

6.3 Profile District Sheikhupura

Sheikhupura District is a district of Punjab province, Pakistan. Sheikhupura is the headquarters of Sheikhupura District. According to the 2017 census of Pakistan, the district had a population of 3.46 million of which 34.72% were urban¹.

Sheikhupura District was agricultural region with forests during the Indus Valley Civilization. The Vedic period is characterized by Indo-Aryan culture that invaded from Central Asia and settled in Punjab region. The Kambojas, Daradas, Kaikayas, Madras, Pauravas, Yaudheyas, Malavas and Kurus invaded, settled and ruled ancient Punjab region. After overrunning the Achaemenid Empire in 331 BCE, Alexander marched into present-day Punjab region with an army of 50,000. The Sheikhupura was ruled by Maurya Empire, Indo-Greek kingdom, Kushan Empire, Gupta Empire, White Huns, Kushano-Hephthalites and Shahi kingdoms.

6.3.1 Administration

The District Sheikhupura, is divided into five tehsils, which contain a total of 112 Union Councils. Table 6.1 showing the Administration in Sheikhupura:

Table 6.1 Administration District Sheikhupura²

District	Tehsils	Union Councils
Sheikhupura	Sheikhupura	51
	Ferozewala	21
	Muridke	21
	Sharaqpur	08
	Safdar Abad	11

¹ <https://www.pbs.gov.pk/census-2017-district-wise/results/056>

² <https://sheikhupura.dc.lhc.gov.pk/PublicPages/HistoryOfDistrict.aspx>



Figure 6.1 Map of District Sheikhupura

6.4 Physical Environment

Physical environment consists of existing landform and land use of the project site, geology and geomorphology, soils, groundwater, surface water, meteorology, and climate. The pre-project condition (i.e., baseline) of each these components of the physical environment are described here below. The baseline environmental conditions based on the said data sets have subsequently been used to identify the potential impacts on the physical, biological, and socio-economic environment that are likely to arise from the project activities.

6.4.1 Geography

Sheikhupura is situated at about 36 Km from Lahore, the provincial headquarters. Sheikhupura lies 31°42'51.16"N latitude and 73°59'3.49"E longitude. The city is joined with its surrounding big urban centres like Faisalabad 94 Km, Sargodha 143 Km and Gujranwala 54 Km. Sheikhupura is also a railway junction. Trains coming from

Lahore take these routes for Faisalabad and Shor Kot. Sheikhupura City is connected with Faisalabad through newly constructed road Lahore Faisalabad Road project and also connected Faisalabad by M2 and M3 Motorway. Hiran Minar, a place of archaeological and historical growth, is situated about 5 kilometres from city.

6.4.2 Geology and Soils

The area is a part of Rachna Doab, and consists of some recent sediment brought by spill channel from Chenab River. There are some old channel levee remnants and old basins filled up with clay materials. It is probably of late Pleistocene age derived from mixed calcareous, sedimentary and metamorphic rocks of the lower Himalayas. The only mineral products of the District are Kankar and Kallar. The small particles of Kankar may be burnt into lime. These are the features of all bare lands and are found on the surface or a little below it. Kallar is found on mounds, which are sites of old ruined habitations, and is used for the manufacture of crude saltpeter.

6.4.3 Climate³

The climate of the district is subject to extreme variations. From the middle of December to the middle of March, the air is very damp, cold and light to moderate rain falls at intervals. The winter rain is followed by a spell of pleasant weather. In April, the temperature rises fast and the two successive months are very hot. Towards the end of June, Monsoon appears. The average rainfall in the district is about 635 mm. The upland or the Bar in the North West, in the natural condition, is a level prairie thickly dotted over with a stunted under-growth of bush jungle. The Bar Soil is popularly known as Missie. The low land along the river Ravi has light loam. The central portion which is the Deg Valley has stiff soil. Stiff soil is either Rohi or Kallarathi depending on the salt (kallar) contents.

³ <https://www.worldweatheronline.com/sheikhupura-weather-averages/punjab/pk.aspx>

a. Temperature

The ambient temperature of proposed project region varies from summer to winter. The change in temperature has a direct influence on the environment of the project area. Hot and dry conditions during summer season changes the air quality by increase in particulate matters due to drying of road pavements and open soil. Following table represents the temperature data of past three years.

Table 6.2 Temperature Sheikhupura (°C) (Maximum, Average & Minimum)

Temperature (°C)												
2020												
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Max.	17	24	26	35	40	44	43	39	40	37	27	22
Min.	9	10	15	22	29	34	34	31	28	23	16	12
Avg.	14	19	22	31	36	40	40	36	36	32	23	18
2021												
Max.	21	28	34	37	40	43	40	41	38	36	31	23
Min.	11	15	18	22	28	32	32	30	27	22	16	11
Avg.	17	23	28	32	36	39	37	36	34	30	24	18
2022												
Max.	19	23	38	45	47	44	43	39	40	37	27	22
Min.	10	10	18	25	30	34	34	31	28	23	16	12
Avg.	15	17	30	38	41	40	40	36	36	32	23	18
2023												
Max.	21	28	34	37	40	43						
Min.	11	15	18	22	28	32						
Avg.	17	23	28	32	36	39						

b. Rainfall and Rainy Days

The data of past three years of rainfall and rainy days is listed below table:

Table 6.3 Rain fall and Rainy Days (Sheikhupura)

Rainfall (mm) and Rainy days												
2019												
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Avg. Rainfall	130.7	43.4	55.8	42.2	30.6	121.2	58.3	39.9	2.9	31.4	28.4	92.9
Rainy Days	4	6	5	2	2	1	5	3	4	0	3	1
2020												
Avg. Rainfall	22.5	112.1	29.8	48.8	37.1	108.5	157.7	124.4	0	3.6	9.8	58.2
Rainy Days	6	2	7	3	5	5	4	8	4	0	0	0
2021												
Avg. Rainfall	4.9	7.1	15.5	15.5	64.2	84.5	224.6	49.3	12.2	12.7	0	0
Rainy Days	3	1	1	1	2	6	5	2	1	1	0	0
2022												
Avg. Rainfall	27.7	7.9	0.1	0.2	2.1	108.5	157.7	124.4	0	3.6	9.8	58.2
Rainy Days	3	1	0	0	0	5	4	8	4	0	0	0
2023												
Avg. Rainfall	22.5	112.1	29.8	48.8	37.1	108.5						

Rainfall (mm) and Rainy days						
Rainy Days	6	2	7	3	5	5

c. Wind Speed

The data of past three years of maximum and average wind speed and gust speed is given in the following table.

Table 6.4 Wind Speed (kmph), Sheikhupura

Wind Speed (kmph)												
2020												
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Max. Wind	10.3	11.4	13.6	13.9	13.6	17.7	17.9	14.4	15.8	12.2	9.9	7.1
Avg. Gust	13.4	13.9	15.3	15.9	14.8	15.8	16.8	15	17.9	13.1	11.2	7.6
Avg. Wind	7.7	8.2	9.3	10	10	11.4	12.3	10.4	11.8	8.2	6.9	4.9
2021												
Max. Wind	9.6	12	14.4	15	18.9	16.6	16.6	14.6	11.3	9.9	10.9	10.5
Avg. Gust	11.4	13.8	16.3	15.8	17.8	16.1	14.7	15.4	12.4	11.4	12.8	12.7
Avg. Wind	8.2	10.1	10	12.2	11.3	10.7	10.2	10.5	7.6	6.8	7.6	7.6
2022												
Max.	10.3	11	17.8	18.2	19.6	20.3	19.8	17.5	14	13.3	10.3	8.2

Wind Speed (kmph)												
Wind												
Avg.	11.8	12.4	18.7	19.4	17.5	19.4	19.7	17.1	5.4	14.5	12	9.8
Gust												
Avg.	6.9	7.4	11.7	12.4	11.9	14.3	11.8	9.7	8.7	7.1	5.7	7.3
Wind												
2023												
Max.	11	14.1	14.9	16.5	19.2	-	-	-	-	-	-	-
Wind												
Avg.	11.8	15.3	17.8	16.7	18.7	-	-	-	-	-	-	-
Gust												
Avg.	7.3	9	10.4	10.1	12.5	-	-	-	-	-	-	-
Wind												

d. Cloud and Humidity

The data of past three years of average cloud and humidity is given in the following table.

Table 6.5 Cloud and humidity (%), Sheikhupura

Cloud and Humidity (%)												
2020												
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Avg.	25	27	22	13	8	7	21	20	14	6	17	13
Cloud												
Humidity	43	61	51	28	20	20	43	49	48	33	41	36
2021												
Avg.	39	17	37	25	23	21	35	38	14	1	15	14
Cloud												
Humidity	58	45	59	35	24	22	32	51	38	16	25	35

Cloud and Humidity (%)												
2022												
Avg. Cloud	16	12	12	18	24	26	43	27	21	11	2	13
Humidity	42	32	27	23	27	27	46	47	56	41	24	27
2023												
Avg. Cloud	34	18	10	10	8	-	-	-	-	-	-	-
Humidity	59	53	29	12	15	-	-	-	-	-	-	-

e. Sun Hours and Sun Days

The data of past three years of sun hours and sun days is given in the following table.

Sun Hours and Sun Days												
2020												
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Sun Hours	334	311	344	355	372	360	363	372	354	372	352	353
Sun days	27	22	26	28	29	29	26	28	26	31	27	30
2021												
Sun Hours	294	336	322	346	349	324	335	337	330	372	352	359
Sun days	25	27	24	27	26	25	27	23	26	31	30	31
2022												
Sun Hours	348	328	359	354	363	319	316	343	336	357	360	361
Sun days	28	27	30	29	29	24	26	29	29	30	30	31
2023												
Sun	301	307	367	350	369	-	-	-	-	-	-	-

Sun Hours and Sun Days												
Hours												
Sun days	28	27	31	30	31	-	-	-	-	-	-	-

f. UV Index

The data of past three years of UV index is given in the following table.

UV Index												
2020												
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
UV Index	3	5	7	9	10	10	7	9	8	8	6	4
2021												
UV Index	4	5	5	8	7	10	8	7	9	7	6	3
2022												
UV Index	5	7	7	9	8	10	6	8	8	7	6	4
2023												
UV Index	5	5	8	10	10	-	-	-	-	-	-	-

6.4.4 Water Sources, Sewage and Drainage

The water supply in Sheikhupura is collected from ground water through a network of 41 tube wells, which covers 33% of the town and 40% of the population. The distribution system consists of 4 overhead reservoirs with a combined capacity of 290000. No plans are currently being developed to improve public water supply mechanisms. The ground water is sweet in taste and is being recharged from canal passing near city. The water supply is based on ground water and tube wells which

are 41 in number. The water supply network covers 33% of the town and serves 40% of the total population. The distribution system consists of 4 overhead reservoirs of 290000 gallon capacity. The distribution is made of a looped network which is made of different type of materials including A.C., P.V.C., C.I. and GI pipes. The system is old and most of the pipes are worn out and leakage of pipes results in water losses. The sizes of pipe vary from 3 to 6 inch diameter.

The sewerage system covers 20% of the city and serves 30% of the population. Waste water is generally disposed of through open drains to the nearby sewer system, which is noticed to cause environmental contamination and water borne diseases. The residential area is expanding continuously on all sides of the town without any proper planning, which has reduced the coverage of facility. No plans are being developed to address these issues. Seepage from the canals in the Area has considerably raised the water table resulting in water logging and salinity. The tube wells installed by the WAPDA have however considerably brought down the water table. The sewerage system is only available in 20% of the city area which serve about 30% of population. The waste water is generally disposed-off through open drains to the nearby sewer system, which are not only polluting the environment but also causing many water borne diseases. The residential area is expanding continuously on all sides of the town without any proper planning, which have reduced the coverage of facility to approximately.

6.4.5 Seismology

Pakistan Building Code distributes the country into 4-zones. The project site falls in Moderate damage Zone, as such structural design of buildings and others will follow the applicable criteria for the zone. Seismic details are very important consideration for any planning activity. As it directly lays impact on the construction of site. The

project lies in seismic Zone-2A, This Zone-2A prone to minor damage, distant earthquake may cause damage to structure with fundamental periods greater than 1.0 second. It corresponds to intensity V to VI of the Modified Mercalli Intensity Scale of 1931.

6.4.6 Environmental Monitoring

Following table's present analysis results of noise, soil, water, air quality tested by EPA certified Environmental Lab.

a) Water Quality

To check the existing water quality of the area, a sample was collected from the proposed project site. Following table 6.6 presents summary of results.

Table 6.6 Summary of parameters for Ground Water

Sr. No.	Parameters	Unit	PEQS	Concentration
1.	pH Value		6.5 to 8.5	7.27
2.	Chloride	mg/l	<250	22
3.	Sodium	mg/l	200	74
4.	Potassium	mg/l	...	3.0
5.	TDS	mg/l	<1000	325
6.	Sulphate	mg/l	250	154

b) Air Quality

Ambient air quality was also monitored by taking 03 different sites of the proposed project. Table 6.7 shows that all parameters monitored for ambient air quality are under compliance with PEQS.

Table 6.7 Summary of Ambient Air Quality Analysis

Sr. No.	Source	CO (ppm)	SO ₂ (µg/m ³)	NO ₂ (µg/m ³)	O ₃ (µg/m ³)	PM ₁₀ (µg/m ³)
	PEQS	9	120	80	130	150
1.	Mid Site	0.0	1	62	5	107

c) Noise

The noise levels recorded at the selected spots of the proposed project area were within the acceptable range as shown in Table 6.8.

Table 6.8 Results Analysis of Noise Monitoring

Sr. No.	Source	Noise (dBA)	PEQS
1	Mid Site	55.1	75

Lab Reports from EPA Certified Lab of all the quality parameters is attached as Annexure-I.

PICTORIAL PROFILE OF ENVIRONMENTAL MONITORING



Environmental Impact Assessment (EIA) Report
Construction of Veterinary Medicine Plant by LCI Limited
30-Km Lahore-Sheikhupura Road-District Sheikhupura.



6.5 Biological / Ecological Environment⁴

A survey of the local biological environment was conducted which includes the study of flora and fauna of the project area. The detail flora and fauna study along with the conditions of surrounding areas is the main requirements of the EIA study. Ecological data is necessary to identify and assess the main effects, which that development is likely to have on the environment in this case.

a. Flora and Fauna

The fauna and flora of the area include: Kikar, Piple, Bohar, Eucalyptus, Popular and Sharin. There is very little of wildlife in the area. Wild boar is met within the riverine track. Jackals and hares play havoc with crops. Waterfowls are found everywhere in the Degh valley. Particularly after good rains. Black partridges are found along the Ravi and gray ones all over the district. Falcon, eagle, quail, Starling. Jungle pigeon, Russian Sparrow, all doves, all ducks and egrets, king fisher, all snipes, parrot and local sparrow. Crow were also found in the district.

6.6 Socio-Economic Environment

This section describes the key socio-economic features of the district and study area, including the administrative setup, population, education, health, infrastructure, occupations, and other cultural resources. Primary and secondary data sources were used to develop the socioeconomic baseline of the area.

i. Population⁵

According to census 2017 total population of District Sheikhupura is 3460426. In Total population males are 1789956 and female are 1670310. Average annual growth rate is 2.22 from 1998 to 2017.

⁴ <https://www.urbanunit.gov.pk/Download/publications/Files/8/2021/PCIP%20Cities%20Profile-Siekhupura.pdf>

⁵ <http://www.pakinformation.com/population/sheikhupura.html>

ii. Administrative Setup

The district comprises of 05 tehsils i.e Sheikhupura, Ferozewala, Muridke, Sharaqpur and Safdar Abad.

Following are the list of Municipal Committees in Sheikhupura District

- Sheikhupura Municipal Committee
- Farooq abad Municipal Committee
- Mananwala Municipal Committee
- Safdar abad Municipal Committee
- Khanqah dogran Municipal Committee
- Ferozwala Municipal Committee
- Kot Abdulmalik Municipal Committee
- Muridke Municipal Committee
- Narang Mandi Municipal Committee
- Sharaqpur Municipal Committee

iii. Human Resource Development Index

– UNDP Report

As per UNDP report, the Human Development Report 2010, Pakistan's HDI value increased from 0.311 to 0.490 during 1980 to 2010, an increase of 58% or average annual increase of about 1.5% which ranked it 10 in terms of HDI improvement in comparison to the average progress of other countries. Pakistan's life expectancy at birth increased by more than 9 years, mean years of schooling increased by about 3 years and expected years of schooling increased by almost 4 years. Pakistan's GNI per capita increased by 92 per cent during the same period.

– UNDP's Human Development index-2010

Pakistan ranks 144th in UNDP's Human Development Index (HDI), out of total 178 countries. According to UNDP's HDI report, Pakistan faces enormous challenges, including poverty, poor healthcare facilities, illiteracy and a continuously soaring population.

iv. Education⁶

The stats for schools operating in the district of Sheikhupura are as below:

Gender	Higher Secondary	Secondary	Elementary	Primary	Total
Male	07	78	84	443	612
Female	11	71	133	325	540
Total	18	149	217	768	1125

v. Health Facilities⁷

The stats of health facilities operating in the district of Sheikhupura are as below;

Sr. No.	Health Facilities	Total Number
1.	DHQ Hospital	01
2.	THQ Hospital	04
3.	RHC	07
4.	BHU	80
5.	MCH Centers	14
6.	Rural Dispensaries	27
7.	Total	133

⁶ https://sheikhupura.punjab.gov.pk/education_authority

⁷ https://sheikhupura.punjab.gov.pk/district_profile

vi. Industries

The stats of industries in the district of Sheikhupura are as below;

Sr. No.	Industries	Total Number
1.	Textiles	139
2.	Chemical	44
3.	Board and Paper	51
4.	Steel	72
5.	Flour	24
6.	Medicine	26
7.	Rice Mill	97
8.	Fertilizer	02
9.	Auto industries	25
10.	Others	289
11.	Total	769

vii. Cultural Heritage Sites Sheikhupura District

- Sheikhupura fort, east of Sheikhupura town, Sheikhupura.
- Baoli and mosque, Jandiala Sher Khan, Sheikhupura.
- Hiran Minar and Tank, Sheikhupura.
- Tomb of Abdullah Shah, Jandiala Sher Khan, Sheikhupura.
- Mound Mian Ali Sahib, Mian Ali Faqiran, Sheikhupura.
- Tibba (Mound), Kala Shah Kaku, Sheikhupura.
- Tomb of Noor Muhammad, Jandiala Sher Khan, Sheikhupura.
- Tomb of Hafiz Barkhurdar, Jandiala Sher Khan, Sheikhupura

viii. Caste System

There is not any documented or known site of archeological, or historical in the project site. Hirn Minar is an interesting and popular tourist resort present in Sheikhupura.

The main tribes of the district are the Jat (Virks, Cheemas, Chathas, Tarars, Hangars, etc.) Khokhar, Pathan, Dogar, Gujar, Rajput, Bhatti, Syed, Arain, Qureshi, Wahga, Maan and Kharal.

ix. Languages

The predominant language of the district is Punjabi, 97.07% of the population spoke Punjabi, 1.28% Urdu and 1.01% Pashto as their first language.

x. Religion

Islam is the predominant religion in Sheikhupura which covers over 96.10% of the population.

xi. Transportation

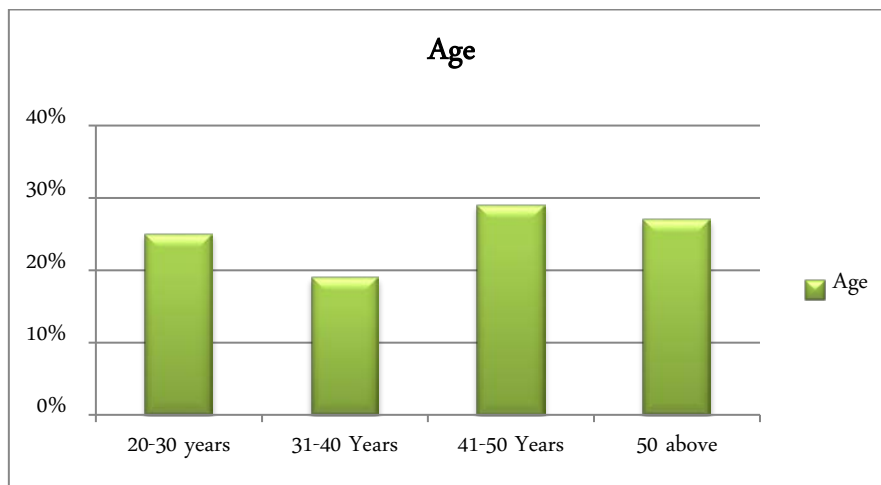
Different mode of transportation is available in the district and being used by the locals which includes Cars, Rickshaw, Bus, Taxi and others.

6.6.1 Quality of Life Values

This section covers the social structure of this area. ECO team carried out a detailed survey in the project area and collected the desired information. Socioeconomic questionnaire was used as survey tool by the survey team to collect desired information. Graphical representations of results of socio-economic survey are given as follows.

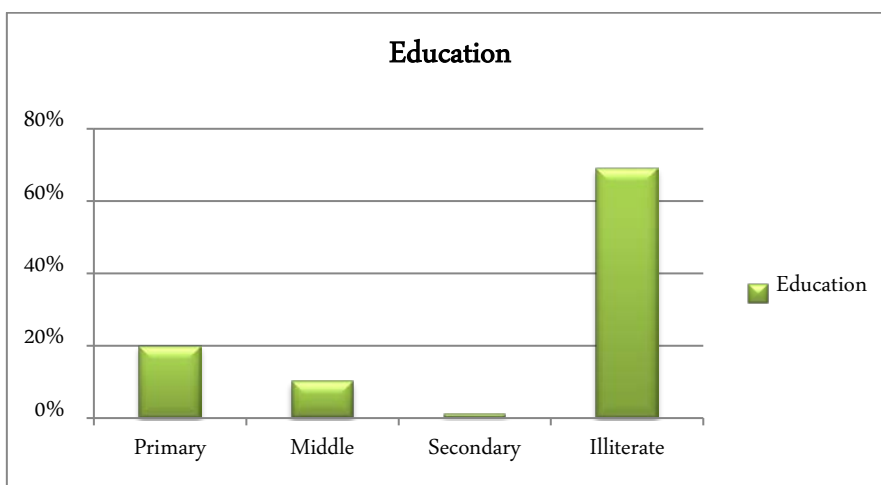
a. Age

Age of the stakeholders was also recorded. The people interviewed for the socioeconomic assessment belongs to different age groups of which 27% belongs to the age group of 51 and above, 29% belongs to 41-50 years, 19% belongs to 31-40 years and 25% belongs to 20-30 years.



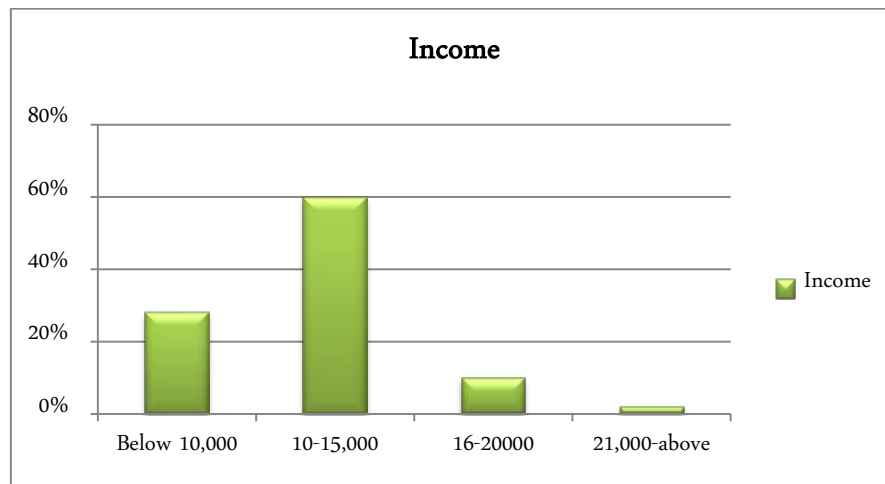
b. Education

According to the data collected with the help of a questionnaire, education level of the people living there was as follows: 69 % of the population was illiterate; 20 % were primary qualified; 10 % were middle qualified, whereas only 1 % percent was having secondary education.



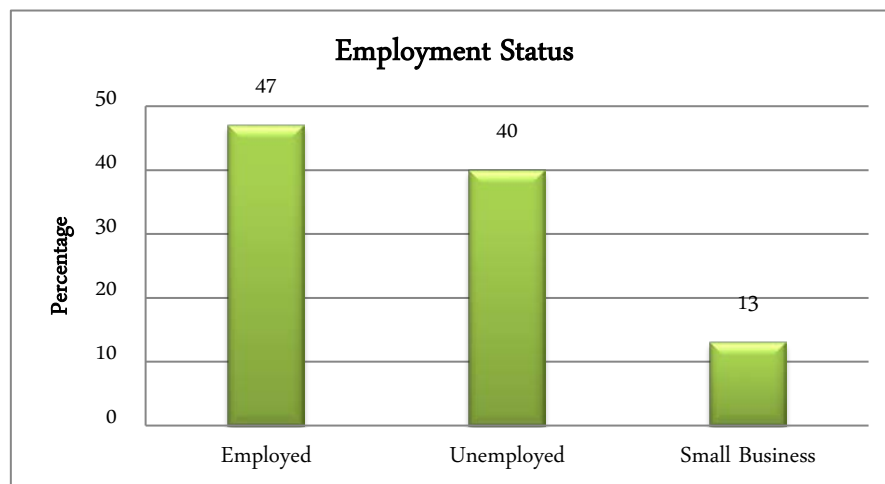
c. Income Level

It is to notify that people living in the vicinity mostly belong to a lower-to-lower middle class. The following graph shows the income level.



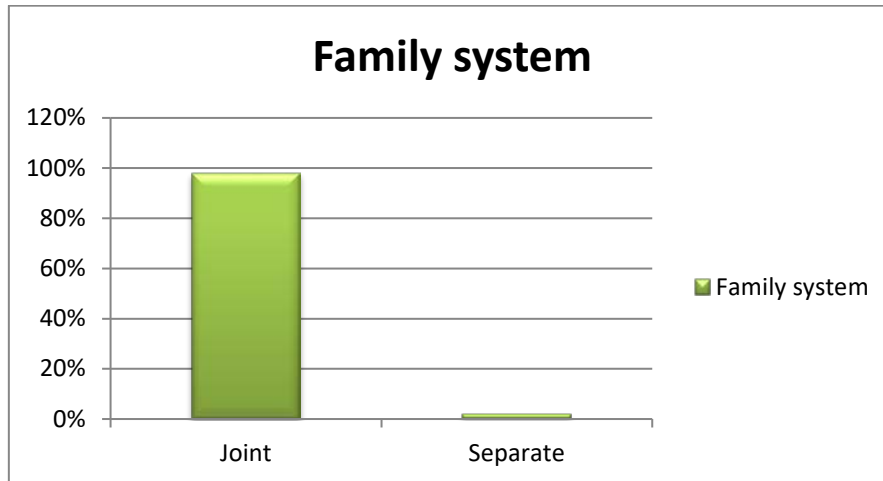
d. Employment Status

It was observed from the survey that 47% of the people who were interviewed in a general survey were employed. 40% of the people running their small business, whereas 13% were unemployed.



e. Family System

It was found during survey that 98% of people were living in joint family system. Only 2% were living independently.



f. Educational Facilities

The educational facilities near the proposed project are bit poor. Whereas small educational facilities are given as follows

- Government high school Sahoki Malian
- Government Girls High School, Chichokimalian
- Iqra Model School, Sheikhupura
- National Model School, Sheikhupura
- High School, Joya wala mod
- Government High School, Malian Kalan

g. Health Facilities

No major health facilities like government hospitals and dispensaries exist in the surroundings of project site areas except few private clinics.

h. Historical, and Recreational Places Near close or along the project site

There is no historical place near the project site.

i. Cultural Site

No cultural site is located near the proposed Project.

j. Historical and Archaeological Sites

No site of historical and archaeological site was observed within or near the Project as well as study area.

k. Caste

The local citizens living nearby the project site belongs to different castes. Mostly people belong to the, Rajpoot, Jutt, Bhatti, Dogar and Arain Families.

l. Language

The mostly spoken languages in the area are Urdu and Punjabi.

m. Dress

Both Eastern & Western dresses are used by local public. Mostly wears eastern dress Shalwar & Qameez while other wears jeans and shirts.

CHAPTER 7

ASSESSMENT OF IMPACTS

CHAPTER SEVEN

ASSESSMENT OF IMPACTS

7.1. Introduction

Assessment of impact of different activities, and of resulting emission of air, noise, gases, wastewater discharges during construction and subsequent operation of the proposed project are discussed in this section. The entire screening procedure was designed in such a way so as to provide a complete assessment of the impacts on the macro-environment and microenvironment of the project. The project site has no protected area such as game reserve, wildlife, national parks, archeological sites, or cultural heritage in its neighborhood. The process for identification of potential impacts involves understanding of sources of effect in the relationship between an activity and environmental parameters. The impact assessment criteria are summarized in **Table 7.1**. However, the details of impacts that may arise during stages of project phases are discussed in Chapter 8 along with their relevant mitigation measures.

Table 7.1 Impact Assessment Criteria	
Nature of Impact	Direct: The environmental parameter is directly changed by the project. Indirect: The environmental parameter changes as a result of change in another parameter. No Impact: When there is no impact on the environment by the project
Mitigation	What measures could be applied to reduce negative impacts or enhance positive impacts

Magnitude	High: Natural and/ or social functions and/ or processes are severely altered Medium: Natural and/ or social functions and/ or processes are notably altered Low: Natural and/ or social functions and/ or processes are slightly altered Very Low: Natural and/ or social functions and/ or processes are negligibly altered Zero: Natural and/ or social functions and/ or processes remain unaltered
Extent	Local: Site Specific/Local • Extends only as far as the activity. • Limited to the site and its immediate surroundings Regional/Provincial: • Will have an impact on the region/province. National: • Will have an impact on a national scale - particularly if an ecosystem or species of national significance is affected. International: • Will have an impact across international borders or will impact on an ecosystem or species of international significance.
Duration	Construction period: Up to 2 years Short Term: Up to 5 years after construction Medium Term: 5-15 years after construction Long Term: More than 15 years after construction
Reversibility of the impact	Reversible: The impact is reversible within 2 years after the cause or stress is removed. Irreversible: The activity will lead to an impact that is in all practical terms permanent
Significance	The significance of the impact is determined as a synthesis of the above assessment criteria in which:

	Low Significance: The impact would not have an effect on the decision to approve the project (or a particular project alternative) Medium Significance: The assessment should have an effect on the decisions unless it is effectively mitigated. High Significance: The decision would be influenced regardless of any mitigation.
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Table 7.2 Characteristics of Environmental Impact from Construction Activities

Sr. No	Environmental Impact	Impact Characteristics					
		Nature	Magnitude	Extent	Duration	Reversibility	Significance
1	Topography	Direct	Low	Localized	Construction Period	Reversible	Low (If provided mitigation measures are effectively implemented)
2	Water Quality	Direct	Low	Localized	Construction Period	Reversible	Low (If provided mitigation measures are effectively implemented)
3	Wastewater Generation	Direct	Medium	Localized	Construction Period	Reversible	Low (If provided mitigation measures are effectively implemented)

Table 7.2 Characteristics of Environmental Impact from Construction Activities

Sr. No	Environmental Impact	Impact Characteristics					
		Nature	Magnitude	Extent	Duration	Reversibility	Significance
4	Air& Dust	Direct	Low	Localized	Construction Period	Reversible	Low (If provided mitigation measures are effectively implemented)
5	Exhaust Emissions	Direct	Low	Localized	Construction Period	Reversible	Low (If provided mitigation measures are effectively implemented)
6	Soil Contamination	Direct	Low	Localized	Construction Period	Reversible	Low (If provided mitigation measures are effectively implemented)
7	Solid Waste	Direct	Low	Localized	Construction Period	Reversible	Low (If provided mitigation measures are effectively implemented)
8	Noise Pollution	Direct	Low	Localized	Construction Period	Reversible	Low (If provided mitigation measures are

Table 7.2 Characteristics of Environmental Impact from Construction Activities

Sr. No	Environmental Impact	Impact Characteristics					
		Nature	Magnitude	Extent	Duration	Reversibility	Significance
							effectively implemented)
9	Biological Environment	Direct	Very Low	Localized	Short term	Reversible	Low (If provided mitigation measures are effectively implemented)
10	Socioeconomic Environment	No impacts	zero	N/A	N/A	N/A	N/A
11	Traffic Flow	No Impact	Zero	N/A	N/A	N/A	N/A

Table 7.3 Characteristics of Environmental Impact from Operational Activities

Sr. No	Environmental Impact	Impact Characteristics					
		Nature	Magnitude	Extent	Duration	Reversibility	Significance
1	Exhaust Emissions	Direct	Low	Localized	Short term	Reversible	Low (If provided mitigation measures are effectively implemented)
2	Wastewater	Direct	Low	Localized	Short term	Reversible	Low (If provided mitigation measures are

Table 7.3 Characteristics of Environmental Impact from Operational Activities

Sr. No	Environmental Impact	Impact Characteristics					
		Nature	Magnitude	Extent	Duration	Reversibility	Significance
							effectively implemented)
3	Groundwater Contamination	Direct	Low	Localized	Short term	Reversible	Low (If provided mitigation measures are effectively implemented)
4	Solid Waste	Direct	Very Low	Localized	Short term	Reversible	Low (If provided mitigation measures are effectively implemented)
5	Noise Pollution	Direct	Low	Localized	Short term	Reversible	Low (If provided mitigation measures are effectively implemented)
6	Fire Hazards and Explosion	Direct	Medium	Localized	Short term	Irreversible	Low (If provided mitigation measures are effectively implemented)

Table 7.3 Characteristics of Environmental Impact from Operational Activities

Sr. No	Environmental Impact	Impact Characteristics					
		Nature	Magnitude	Extent	Duration	Reversibility	Significance
7	Occupational Hazards	Direct	Low	Localized	Short term	Reversible	Low (If provided mitigation measures are effectively implemented)
8	Biological Environment	Direct	Very Low	Localized	Short term	Reversible	Low (If provided mitigation measures are effectively implemented)
9	Socioeconomic Environment	No Impact	Zero	N/A	N/A	N/A	N/A
10	Traffic Flow	No Impact	Zero	N/A	N/A	N/A	N/A

CHAPTER 8

IMPACTS AND MITIGATION MEASURES

CHAPTER EIGHT

IMPACTS AND MITIGATION MEASURES

8.1. Introduction

This section discusses the project's potential environmental impact on the area's soil, water, air, biological resources and socioeconomic condition and, where applicable, identifies mitigation measures that will reduce, if not eliminate, its adverse impact. The assessment carried out in this section is based on potential impacts on overall environmental receptors within the project area.

8.2. Project Location

The proposed project of LCI Limited Animal Health Business is planned at 30-KM, Lahore-Sheikhupura Road, district Sheikhupura, which is ideally located on National Highway N-60 at Sheikhupura. The project site is linked with all major cities of the country through a network of national Highways and Motorways.

8.3. Site Selection

The proposed project is located within the premises of LCI Limited Polyester Fiber Business Plant. The proposed project site is an empty land and is quite far from the polyester fiber plant of LCI Limited. Furthermore, no protected, archaeological, cultural and / or religious places are present around the project site. There is no surface water body present in the form of stream and river. No resettlement and relocation of existing infrastructure and people are involved in this project. Therefore, need of compensation has been ruled out.

8.4. Impacts and Mitigation Measures

8.4.1. Anticipated Impacts during Design Phase

Design and Layout Planning

- Incompatible layout plan and engineering design of the project's structures can undermine the overall aesthetic beauty and ambience of the project area. Also, low utilization of the available space and not designing the structures taking into account, the prospective and futuristic needs can result in structures with low social acceptability and functionality. This impact will be temporary and moderate negative in nature.
- Inappropriate structure of plant and other allied facilities may rupture during the earthquake or any other natural incidence and may cause fire or hazard at the site.

Mitigation Measures

- All structural, layout and engineering should be carried out in strict accordance with the applicable bylaws and engineering parameters.
- The proposed facility should be designed according to international standards for the prevention and control of fire and explosion hazards, including provisions for segregation of process, storage, utility, and safe areas.
- Earthquake-resistant or aseismic structures should be considered while designing or constructing the building in order to protect buildings to some or greater extent from earthquakes

Construction Materials

- Building materials such as hard core, ballast, cement, rough stone and sand required for construction of the project will be obtained from quarries, hardware shops and sand harvesters who extract such materials from natural resource banks such as rivers and land. Since, substantial quantities of these materials will be required for construction of plant, the availability and sustainability of such resources at the extraction sites will be negatively affected, as they are not renewable in the short term.

Mitigation Measures

- All construction materials will be sourced from licensed dealers and suppliers.
- To reduce the negative impacts on availability and sustainability of the materials, the contractor will only order for what will be required through accurate budgeting and estimation of actual construction requirements. This will ensure that materials are not extracted or purchased in excessive quantities. Moreover, the contractor will ensure that wastage, damage or loss (through run-off, wind, etc.) of materials at the construction site is kept minimal, as these would lead to additional demand for and extraction or purchase materials.
- Besides the aforementioned measures, the contractor must also take into account the possibility of reusing building materials and incorporating recycled materials. By doing so, it will contribute to a decrease in the demand for raw materials extracted from natural resources, as well as alleviate the environmental impacts associated with extraction sites

8.4.2. Anticipated Impacts during Construction Phase

8.4.2.1 Positive Impacts (Construction Phase)

Positive environmental impacts associated with project construction phase include the following:

- Income Opportunities

Income Opportunities

The proposed project will create business opportunities by providing market to suppliers during the construction phase. It will also lead to creation of employment both directly and indirectly. Casual laborers, semiskilled and skilled labor professionals such as supervising engineer, contractor staff and architects among others will benefit from the employment opportunities created by the proposed project.

8.4.2.2 Negative Impacts of the Proposed Project

Negative environmental impacts associated with project construction phase include the following:

Impact on Physical Environment

- Topography
- Ground Water Abstraction
- Deterioration of Water Quality
- Air Quality and Dust Emissions
- Generation of Exhaust Emissions
- Soil Erosion
- Solid Waste
- Noise Pollution

- **Impact on Biological Environment**
 - Fauna & Flora
- **Impact on Socioeconomic Environment**
 - Traffic Load
 - Community Health and Safety
 - Influx of Labour
 - Child Labour

Topography

The changes at the site may occur due to construction activities at the site such as excavations and diggings for foundations of various structures. However, this impact will be temporary and moderate negative in nature.

Mitigation Measures

- Excavations will be kept confined to the specified location as per the approved engineering drawings and unnecessary excavations will be avoided.
- Excavated areas will be not left unattended and unfilled for long.

Groundwater Abstraction

The construction of any project utilizes sufficient amount of water to sustain multifarious construction activities. The persistent and prolonged withdrawal of groundwater higher than safe yield limits of the aquifer can enhance the depletion rate. This situation can result in reduced water supplies for other users who share the same groundwater resource.

Mitigation Measures

- Continuous withdrawal and over pumping of groundwater will be avoided. Instead, intermittent pumping will be carried out to conserve the groundwater resource
- The proposed project will utilize the same resource of ground water as of the LCI Limited Polyester Fiber Plant.
- Conservation in water usage will be practiced wherever and whenever possible. Only minimum essential quantities of water will be used according to actual water needs of different activities to avoid generation of large volume of wastewater. For example, water curing of the masonry and concrete structures will be carried out by wrapping around a soaked gunny cloth instead of direct water showering of the structure. Similarly, water from the soaking pits can be used for wetting the raw bricks and curing the masonry works. Water of the hand washouts may be used for filling flushing tanks of the closets.
- Water conservation will be encouraged at the worksite by displaying suitably worded requests on careful water usage.

Deterioration of Water Quality

- There is no surface water body present in the form of canal and river hence impact on water quality is negligible.
- Various materials like construction material, loose soil, fuel, lubricant oil and other oily products, which will be used during the construction phase may probably contaminate groundwater, if they are not handled properly.

- Sanitary wastewater generated at the workers' camp (s) may stagnate in water ponds on the site and can percolate into the soil, thereby, contaminating groundwater.

Mitigation Measures

To avoid any undesirable impact on water resources following mitigation measures are recommended.

- It will be ensured that the drainages within the construction zones are kept free of obstructions. All the loose soil material and stockpiles will be kept out of drains and flow-lines.
- All the stockpiling of excavated and construction materials (sand, gravel, cement, etc.), will be avoided, unless covered by tarpaulins or plastic sheets.
- All waste residuals will be disposed of at identified disposal site.
- Best effort/measures will be placed against accidental spill/ discharge.
- Regular checking and maintenance will be done of all plant and machinery to minimize the risk of fuel or lubricant leakages.
- Temporary sedimentation tanks of adequate capacity will be installed for receiving and treating wastewater from all temporary worksite toilets and at the temporary container offices, if any.
- Water quality monitoring will be done on quarterly basis by 3rd party.

Air Quality and Dust Emissions

The emissions of dust and particulate matter can be significant depending upon the nature of activity taking place i.e., civil work or construction activities etc.**

Particulate matter pollution is likely to occur during the excavation of the top soil and loading and transportation of the construction waste which may affect the site workers and the nearby residents.

Moreover, the air emissions monitored at the proposed site was found to be compliant with Punjab Environmental Quality Standards (PEQS) for Ambient Air, as mentioned in Table 6.7. However, the construction activities might violate these standards if proper mitigation measures were not adopted during construction activities.

Mitigation Measures

- Controlling dust during construction is useful in minimizing nuisance conditions and consequently health (respiratory and eye) complications. It is recommended that a standard set of feasible dust control measures will be implemented for all construction activities.
- All personnel working on the project site will be trained prior to start construction on methods for minimizing air quality impacts. Training will be focused on minimizing dust and exhaust gas emissions from heavy construction vehicles.
- Spray water and/or wet surfaces during excavation works especially during dry seasons.
- Stockpiled soil and sand will be slightly wetted before loading, particularly in windy conditions.
- Vehicles transporting soil, sand and other construction materials will be covered.
- Speed and operation of construction vehicles will be controlled at the site.
- Construction workers will be sensitized on measures to reduce dust emissions

- All bare areas will be landscaped after construction to reduce dust.

Generation of Exhaust Emissions

- Exhaust emissions are likely to be generated during the construction period by the various construction machinery, vehicles and equipment such as generators etc.

Mitigation Measures

In order to control exhaust emissions, the following measures will be implemented: -

- Vehicle idling time will be prohibited
- Diesel generator with high combustion efficiency will be selected to minimize dark smoke generation
- Equipment/machinery to be used will be properly tuned and maintained
- Emissions monitoring will be done on quarterly basis by 3rd party.

Soil Erosion

- Excavation and land leveling activities can destabilize the surrounding land surface, particularly 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 soil and may undermine ability of the spoiled soil to support growth of vegetation and plants

- Onsite storage of the construction materials such as sand, aggregate, crushed stone, cement, bricks, and iron bars on the land without an intervening barrier, can degrade soil quality and may smear them with fine particulates of the dumped materials.

Mitigation Measures

Mitigation measures will include:

- All spoils will be disposed of as desired and the site will be restored back to its original conditions.
- Excavations will be kept confined to the specified foundation spots as per the approved engineering drawings. Unnecessary excavations will be avoided.
- Oils, lubricants, chemicals, and other hazardous materials will be stored safely at their designated spots, enclosures or store rooms, which will be safe from rainfall and away from any potential source of fire.
- All machineries and materials will be stored at the designated areas and compounds.
- All the unspent and left-over materials will be completely removed offsite upon completion of construction and the site will be restored to original or near to original condition

Solid Waste

- The excavation activity will create solid waste and debris and lower the aesthetic value of the land during the construction period.

Mitigation Measures

- Excavation and construction waste will be recycled or reused to ensures materials that would otherwise be disposed of as waste are diverted for productive uses.

- Solid waste generated during construction at construction sites will be safely disposed in defined waste disposal sites.
- The wastes which are reusable/recyclable (iron bars, aluminum) will be sold to waste vendors and those which cannot be sold out (brick pieces) will be used as a filling material for leveling the depressions, subject to technical feasibility.
- Construction workers and supervisory staff will be encouraged and educated to practice waste minimization, reuse and recycling to reduce quantity of the waste for disposal.
- Open burning of solid waste will be strictly prohibited.

Noise Pollution

There would be a probability of generation of excessive noise during the construction phase due to the moving machines such incoming vehicles to deliver construction materials, onsite workers and other normal construction activities. However, this impact can be anticipated temporary and moderate negative in nature, as the proposed project is located within the premises of LCI Limited Polyester Fiber Plant.

Mitigation Measures

The proponent and contractor shall put in place several measures that will mitigate noise pollution arising during the construction.

- Limit pickup trucks and other small equipment to an idling time of one minute, observe a common-sense approach to vehicle use, and encourage workers to shut off vehicle engines whenever possible

- The traffic will be properly managed during loading and unloading of construction material.
- Unnecessary honking of the involved machinery will be avoided.
- Protective gears such as earplugs, etc. will be provided to construction personnel exposed to high noise levels.
- Generator to be used at the site will be enclosed in a sound dampening enclosure.
- All the construction equipment and vehicles used will be in good working condition, properly lubricated and maintained to keep noise within the permissible limits
- Bill boards notifying of the construction activity and timings will be displayed at various locations of the construction site

Impacts on Biological Environment

The proposed project site is a barren land. No major tree cutting is involved in this project. No natural forest area has been observed in the study area. There is no notified ecological sensitive location, migratory path, sanctuaries, etc. within the study area. There are no endangered floral species. The proposed project does not envisage any destruction or displacement of any endemic floral or faunal species; hence the impact will be insignificant.

Mitigation Measures

Following mitigation measures will be adopted to minimize impacts on flora and fauna of the site.

- All the necessary precautions will be taken to ensure the minimum disturbance to the local flora and fauna.

- Strict instructions will be given to all personnel working in project area to refrain from killing, capturing or disturbing any local species of birds, reptiles or mammals encountered during project activities, except in self-defense.
- Unnecessary removal of vegetation will be avoided.
- Landscaping and gardening will be done to restore aesthetic value as well as greening of the site.

Impacts on Socio Economic Environment

Displacement: No displacement of population is envisaged.

Traffic

Construction activities in the project area may present a significant challenge if traffic management is not appropriately addressed. The chosen site is situated along the main Lahore-Sheikhupura National Highway N-60, which is expected to experience increased traffic flow. This surge in traffic could potentially disrupt the movement of the public and the transportation of goods for other industries in the vicinity.

Mitigation Measures

- Movement of vehicles carrying construction materials will be restricted during the daytime to reduce traffic load and inconvenience to the nearby industries
- Strategic placement of traffic police at critical intersections will be done to facilitate better flow of traffic.
- Continuous services of the police in the diversion and control of traffic will be made available.

- The first priority is for the contractor to take the necessary measures to ensure that pedestrians always have access to move around.

Community Health and Safety

During construction, works such as excavation, movement of materials and spoils, and the general increase in vehicular traffic is likely to increase dust and noise pollution in the project area.

Dust emissions can irritate the eyes causing trachoma and respiratory problems. Although, these problems are reversible, the long-term exposure to dust will have a serious impact on the health status of those present close to construction work.

In addition, noise levels are likely to significantly increase, especially from construction vehicles and machinery. Although intermittent, the noise levels during the peak construction period may cause hearing impairment, sleep disturbance, behavioral change or anxiety.

Construction traffic movements (of materials and workforce), in addition to general project traffic vehicles, will result in a significant increase in traffic levels on the local roads especially for traffic to and from the construction sites and construction camp.

Illegal dumping or improper disposal of solid waste can produce breeding places for mosquitos and vermin as well as water stagnation outside the premises of project boundary can produce dengue larvae at site leading to dengue outbreak in the project area.

Mitigation Measures

- Regular water sprinkling should be done on all construction active areas present close to sensitive receptors in order to reduce dust exposure
- Limit the construction activities to day time to avoid disturbance to nearby communities

- Regular maintenance should be done of all construction machinery to maintain noise within the permissible limits of PEQS
- Ensure that potentially disturbing construction noise is not produced outside of working hours
- Construction material delivery truck should be planned in such way to avoid peak traffic hours
- Construction material delivery trucks must be assigned with restricted circulation hours
- Establish and enforce speed limits especially in proximity to sensitive receptors such as residential communities
- Install necessary safety signs and speed bumps to alert drivers that they are approaching towards sensitive receptors
- Assign a person from traffic police department to manage and handle traffic load during the peak construction times of the project
- Inform local residents in advance regarding road closure and rerouting of vehicles and pedestrians' traffic
- Contact with traffic police departments for maintaining traffic on roads which requires continuous police monitoring
- Contractor should ensure proper disposal of waste generated at site
- Constructor should strictly prohibit illegal dumping of waste
- Contractor should eliminate unnecessary container habitats that collect water in which dengue larvae can produce

- Contractor should conduct workshops at nearby residential area regarding dengue awareness and precautionary measures

Influx of Labor

During Construction phase, influx of immigrant workers at site may expose to many communicable diseases such as pulmonary infection, typhoid, tuberculosis, cholera and dysentery. The main factors that will promote transmission of such diseases include: dust and exhaust emissions, unavailability of portable water and improper disposal of waste at site.

The influx of labors, typically young guys seeking construction jobs can be associated with a series of social challenges such as crime, illegal drug abuse and prostitution. Villainy such as drug abuse and prostitution would affect social harmony and security in project area and ruining the image and intent of an otherwise a good project.

The young guys and greater number of drivers, who are expected to pass through the settlements, can also cause social disturbance in communities near the project site by spreading Human Immunodeficiency Virus (HIV) / Acquired Immune Deficiency Syndrome (AIDS) and Sexually Transmitted Infections (STIs) among people.

Many of the skilled labor employed from outside the project area may cause some antipathy among the local people and outsiders. This influx of immigrant labor may lead to growth of unplanned settlements as the workers will compete for limited resources. This impact will cause strain on local resources especially accommodation and social utilities such as medical centers and schools located near the project area.

Mitigation Measures

- Create awareness among workers on proper sanitation and hygiene practices to endorse proper health
- Maintain good housekeeping practices at all project site
- Provide adequate personal hygiene facilities in good condition with adequate supply of clean water
- Make arrangements to treat the affected workers on time to control the movement of vectors disease
- Sensitize workers and surrounding communities on awareness and prevention of HIV/AIDS and STI through training, awareness campaigns and workshops during community meetings
- Provide proper and free HIV/AIDS and STI health screening and counselling for site workers and community members
- Develop and enforce a strict code of conduct for workers to regulate behavior in the local communities
- Eliminate an employee who continues misconduct or lack of care, carries out duties amateurishly or inattentively, fails to conform to provisions of the contract, or persists in any conduct which is harmful to safety, health, or the protection of the environment.
- Taking all sensible precautions to avert illicit, vicious conduct by or amongst the Contractor's personnel, and to preserve unity and harmony and protection of people and property on and near the site

- Prohibiting drugs, alcohol, weapons, and ammunition on the worksite among personnel.
- Site security preparations must be contained within the Bills of Quantities (BOQs) to avoid any delays which might be caused due to insecurity.
- The Contractor in cooperation with the security organs must create awareness to the security situation on the ground all the times.
- Appropriate fencing, security check points, gates and security guards are to be provided at the construction site to ensure the security of all equipment, machinery and materials, as well as to secure the safety of site staff.
- The Contractor must guarantee that good relations are maintained with local communities and their leaders to help reduce the risk of vandalism and theft.
- To avoid conflicts among local people on employment matter, it is proposed that the Contractor employs the locals in cooperation with local administration in unskilled and semi-skilled duties. This will reduce pressure on existing resources such as housing, schools and health facilities
- Unskilled and skilled labor to be hired from the local community as far as possible to minimize on influx of immigrants into the community.

Child Labor

The child labor is common in the areas of low-income groups. The parents of underage children prefer to get their children hired in small shops as helpers and waiters in hotels for earning money and supporting household livelihoods. Moreover, in this project, no child having age below 18 would be allowed to be employed in any type of construction work.

Mitigation Measures

- Ensure that contractor shall have its employment policy in accordance with relevant act and labor policies in Pakistan.
- Contractor shall ensure the presence of all persons at site are adults and have their proper identity card with them.

8.4.3 Anticipated Impacts during Operational Phase

8.4.3.1 Positive Impacts of the Proposed Project

Positive impacts associated with project in the operational phase include, but not limited to the following:

- Social Perspective
- Economic Perspective
- Environmental Perspective

Social Perspective

- Improved Animal Health: Veterinary medicine plants contribute to better animal health, leading to healthier livestock and pets, which are essential for agricultural productivity and companionship.
- Disease Control: These plants produce vaccines and medicines that help control and prevent the spread of infectious diseases among animals, safeguarding public health and preventing zoonotic diseases.
- Enhanced Human Health: Healthy animals result in reduced risk of diseases transmitted from animals to humans, promoting overall public health and reducing healthcare burdens.

Economic Perspective

- **Livestock Productivity:** Veterinary medicines and vaccines enhance the productivity of livestock, increasing yields in animal-based industries like dairy, meat, and poultry, thus boosting the overall agricultural sector.
- **Livestock Export Opportunities:** Improved animal health enables countries to meet international health and safety standards, opening up export opportunities for livestock and related products, thereby improving trade balances.
- **Employment Generation:** Veterinary medicine plants create job opportunities for skilled professionals, technicians, and support staff, contributing to local economic growth and development.

Environmental Perspective

- **Sustainable Livestock Farming:** By promoting animal health and reducing the need for excessive antibiotic usage, veterinary medicine plants support sustainable and responsible livestock farming practices.
- **Conservation of Endangered Species:** These plants play a crucial role in developing medicines and treatments for endangered animal species, aiding conservation efforts and biodiversity protection.
- **Eco-Friendly Practices:** Veterinary medicine plants can focus on environmentally friendly packaging, waste management, and energy-efficient production processes, minimizing their ecological footprint.

8.4.3.2 Negative Impacts of the Proposed Project

Potential environmental and social issues associated with project operational phase include the following:

- Exhaust Emission
- Wastewater Generation
- Noise Generation
- Solid Waste
- Fire and Explosions
- Occupational Hazards and Accidents
- Impact on Ecology & Biodiversity

Exhaust Emission

- Gaseous and exhaust emissions may generate from the sources include diesel generators and transportation vehicles.

Mitigation Measures

In order to control emissions, following mitigation measures will be adopted:

- Generators to be used at the site will be properly encased and serviced regularly.
- Transportation vehicles and machineries to be used at the plant will be properly and timely maintained and serviced regularly to control the emission.
- Emission testing will be done on quarterly basis by 3rd party.

Wastewater Generation

The major effluent from the facility will be cooling tower bleed off. Other sources may

include shower water, toilet water, kitchen water, etc. If drain directly, it will pollute the environment.

Mitigation Measures

Following mitigation measures will be adopted for effective management of existing water quality e-g

- An efficient effluent treatment plant is proposed within the plant facility to treat wastewater coming from the production process
- Domestic sewage will be discharged into an existing drain after treatment
- Good housekeeping practices will be adopted at the site.
- Wastewater sampling will be done on quarterly basis by 3rd party.

Noise

Noise would be an inevitable by-product of the operation. The principal sources of noise at the facility involves motors, draft fans, pumps, extruders, operations of standby generators and transportation vehicles etc.

Mitigation Measures

Mitigation measures to reduce noise levels are as follows:

- Noisy equipment/machinery will be housed in closed buildings.
- Pumps will be regularly tested for an engineering fault.
- Generator will be enclosed in a sound dampening enclosure.
- Employees working in high noisy areas will be moved to quiet areas in order to limit their exposure.

- PPE such as ear plugs and ear muffs will be provided to the workers in the vicinity of the machinery producing noise more than permissible level to avoid hearing problems.
- Serviced and regularly maintained vehicles will be used.
- Drivers will be sensitized to avoid unnecessary gunning of vehicle engines or hooting.
- Noise monitoring will be done on quarterly basis by 3rd party.

Solid Waste

During the manufacturing process of veterinary medicines, both solid and liquid waste are generated. Solid waste includes packaging materials, manufacturing residues, contaminated equipment, and expired or rejected products. Liquid waste consists of process effluents, cleaning wastewater, spills, and unused or expired solutions.

Mitigation Measure

- Development and implementation of a waste management plan by LCI Limited Animal Health Business, to properly handle and dispose of both solid and liquid waste generated during the manufacturing process. This plan would outline procedures for segregating, recycling, and treating waste, minimizing its impact on the environment.
- Establishment of spill containment measures to prevent accidental releases of liquid substances. Implementing an emergency response plan to address spills promptly and effectively, minimizing their potential to contaminate soil or water sources.
- Training the staff on safe handling procedures for hazardous materials to reduce the risk of accidents and minimize the generation of hazardous waste. All the hazardous

waste generated during the manufacturing process will handed over to the EPA certified waste management vendor

- All the non-recyclable waste will be sold to the EPA certified waste contractor.
- No waste will be dumped at any location outside the plant boundary.
- Records of all waste generated will be maintained. Quantities of waste disposed, recycled, or reused will be logged on a Waste Tracking Register.
- Training will be provided to each site personnel regarding waste identification, segregation, and management of waste.

Fire and Explosions

Poorly constructed electric installations can lead to fire and explosion that may in turn cause injury and death of a worker. Welding or cutting torch on or near drum (even empty) should never be used because product (even just residue) can ignite explosively. Fuel or oil spills around the generator may pose a risk of a fire explosion.

Mitigation Measures

Recommended measures to prevent and control fire and explosion risks include the following:

- The whole plant will be designed and constructed according to international standards for the prevention and control of fire and explosion hazards.
- Routine inspection will be done to check that the area around the generator is free of clutter and no combustible material is present.
- Accidental spills will be immediately cleaned up. Workers will be trained on handling accidental spillage of flammable substances that may trigger fires.

- Fire extinguishers, fire hydrants and fire alarms will be provided at convenient locations within the facility. These equipment will be regularly inspected and maintained by a reputable fire security company.
- Fire drills will be conducted at least biannually to ensure that workers are conversant with the action to take in the event of fire or explosions.
- Fire awareness materials will be placed in strategic locations within the facility to educate the workers and visitors on what to do in the event of fire.
- An elaborate emergency response plan will be developed to address the risks associated with the facility 's operations.
- “No smoking signs” will be displayed as appropriate and measures taken against those not adhering to this order.

Occupational Hazards and Accidents

- There could be a number of safety issues during operational phase. General impression in the facility operations is that the workers hesitate to use the safety equipment.
- Workers exposing to heat may suffer from heat related illnesses.

Mitigation Measures

In order to ensure workers safety at the site, following measures will be implemented.

- Workers should cover their skin to prevent sunburn, but also wear loose-fitting clothing that lets sweat evaporate while stopping radiant heat.
- Workers must have adequate potable (safe for drinking) water close to the work area, and should drink small amounts frequently.

- Rotating job functions among workers can also help minimize overexertion and heat exposure.
- All workers at the site should also be provided with personal protective equipment such as hats and bandanas.

In order to ensure general safety at the site, following measures will be implemented.

- Necessary health and safety rules shall be enforced by the management.
- First Aid kits will always be available at the site and staff members trained in first aid administration.
- Clear signage will be posted alerting of possible danger situations.

Impacts on Ecology and Biodiversity

The probability and consequences of significant ecological impacts occurring as a result of the operation are considered to be almost negligible as there is no engendered fauna and flora exists at the site. Whereas, the proposed project is located within the premises of LCI Limited Polyester Fiber Plant, the probability of presence of any wildlife in the area is absolutely negligible.

Mitigation Measures

- The proponent shall plan an extensive tree plantation drive within and without the premises of the factory
- All the necessary precautions shall be taken to ensure the minimum disturbance to the local flora and fauna.

- Strict instructions shall be given to all personnel working in project area to refrain from killing, capturing or disturbing any species of bird, reptile or mammal encountered during project activities, except in self-defense.

Social Impacts

Positive Impacts: There will be job opportunities for the local people during operational phase

Negative Impacts: Local people and the nearby site workers may complaint in future about facility operational activities such as, noise from production process and vehicular movement.

Mitigation Measures

- During operation phase, the Proponent will utilize their human resource policy in hiring personnel required to operate the facility.
- The Proponent will ensure that during hiring of personnel no discrimination will be done on the grounds of race, ethnicity, religion, gender, and political affiliation.
- Complaints from the people shall be recorded and solved on immediate basis.
- The employer and site manager will try to resolve grievance in the first instance.
- A booklet outlining grievance contact points will be maintained.

8.5 Project Environment Enhancement Measures

The environmental enhancement measures that will be adopted at the site are as follows;

- Environmental monitoring will be done by 3rd party on quarterly basis.
- Generators to be used at the site will be properly encased and serviced regularly.

- Transportation vehicles and machineries to be used will be properly and timely maintained and serviced regularly to control the emissions.
- An efficient effluent treatment plant is proposed within the plant facility to treat wastewater coming from the production process
- Domestic sewage will be discharged into an existing drain after treatment
- Good housekeeping practices will be adopted at the site.
- Noisy equipment/machinery will be housed in closed buildings.
- Generator will be enclosed in a sound dampening enclosure.
- PPE such as ear plugs and ear muffs will be provided to the workers in the vicinity of the machinery producing noise more than permissible level to avoid hearing problems.
- Serviced and regularly maintained vehicles will be used.
- A temporary waste storage area will be designated within the existing premises of the plant
- All Recyclable waste generated from the production process will be recycled within the facility.
- All the non-recyclable waste will be sold to the EPA certified waste contractor.
- Training will be provided to each site personnel regarding waste identification, segregation, and management of waste.
- The whole plant will be designed and constructed according to international standards for the prevention and control of fire and explosion hazards.

- Routine inspection will be done to check that the area around the generator is free of clutter and no combustible material is present.
- Accidental spills will be immediately cleaned up. Workers will be trained on handling accidental spillage of flammable substances that may trigger fires.
- Fire extinguishers, fire hydrants and fire alarms will be provided at convenient locations within the facility. This equipment will be regularly inspected and maintained by a reputable fire security company.
- Fire awareness materials will be placed in strategic locations within the facility to educate the workers and visitors on what to do in the event of fire.
- An elaborate emergency response plan will be developed to address the risks associated with the facility's operations.
- "No smoking signs" will be displayed as appropriate and measures taken against those not adhering to this order.
- Necessary health and safety rules shall be enforced by the management at the site.
- First Aid kits will always be available at the site and staff members trained in first aid administration.
- Clear signage will be posted alerting of possible danger situations.
- The proponent shall plan an extensive green belt program.
- All the necessary precautions shall be taken to ensure the minimum disturbance to the local flora and fauna.

- Strict instructions shall be given to all personnel working in project area to refrain from killing, capturing or disturbing any species of bird, reptile or mammal encountered during project activities, except in self-defense.

Table - 8.1: Potential Impacts of the Proposed Project (Checklist)

Environmental Aspects (Construction Phase)		Impact Categorization								
		Mild			Moderate			Severe		
		*	**	***	*	**	***	*	**	***
1. Land Resources										
1.1	Site for disposal of waste generation and disposal of waste material	✓								
1.2	Location of labor camps, material camps, equipment yards and approach roads	✓								
1.3	Access tracks	✓								
1.4	Contamination from diesel and other spills from construction machinery	✓								
1.5	Drainages paths roads crossed. Damages by moving machinery	✓								
1.6	Waste disposal Management	✓								
1.7	Damage to vegetation	✓								
1.8	Any discharge or diversion of water to a graveyard or archaeological site	✓								
1.9	Electrical and mechanical works	✓								

Environmental Aspects (Construction Phase)		Impact Categorization								
		Mild			Moderate			Severe		
		*	**	***	*	**	***	*	**	***
2. Hydrology and Water Resources										
2.1	Impact on source due to water use during construction		✓							
2.2	Contamination of surface water due to diesel and other fluids spilling over from machinery.		✓							
2.3	Protection of construction work from floods	✓								
3. Air Quality and Noise Pollution										
3.1	Dust and smoke and other pollutants		✓							
3.2	Dust or other pollutant from stored materials and spoil heaps		✓							
3.3	Noise control from use of old or outdated machinery		✓							
4. Biological Resource										
4.1	Damage to biological resource flora, fauna, biota		✓							
4.2	Impact of construction on aquatic life (if any)		✓							
5. Socioeconomic and Cultural Issues										

Environmental Aspects (Construction Phase)		Impact Categorization								
		Mild			Moderate			Severe		
		*	**	***	*	**	***	*	**	***
5.1	Existing services; education health, electricity, and water supply	✓								
5.2	Tribal tensions and local rivalries on canals and aquatic life	✓								
5.3	Land ownership and land acquisition	✓								
5.4	Access to other construction materials		✓							
5.5	Effects on sites of archaeological, historical, cultural or religious significance	✓								
5.6	Public safety at construction sites		✓							
5.7	Health and safety of labor and employees on construction site		✓							
5.8	Employment	✓								
5.9	HIV/AIDS and other communicable diseases.	✓								
5.10	Aesthetic / scenic value	✓								
Key:		*Avoidable through design (Preventive) ** Mitigation through contractor's obligation *** Non-reversible permanent change.								

Environmental Aspects (Construction Phase)	Impact Categorization								
	Mild			Moderate			Severe		
	*	**	***	*	**	***	*	**	***

CHAPTER 9

ENVIRONMENTAL MANAGEMENT & MONITORING PLAN

CHAPTER NINE

ENVIRONMENTAL MANAGEMENT & MONITORING PLAN

9.1 Introduction

This section presents the environmental management plan (EMP) for the proposed project. The EMP specifies the mitigation and management measures which the proponent will undertake and shows how the project will mobilize organizational capacity and resources to implement these measures. The EMP provides a delivery mechanism to address adverse impacts, to enhance project benefits and to introduce standards of good practice to be adopted for all project works.

The primary objectives of the EMP are to:

- Outline mitigation measures recommended in the EIA and define responsibility and timing for the implementation of these measures;
- Develop monitoring mechanism & identify parameters that can confirm the implementation of the mitigation of these measures;
- Define roles and responsibilities of the project proponent for the implementation of EMP and identify areas where these roles & responsibilities can be shared with other stakeholders and
- Define the requirements necessary for documenting compliance with the EMP and communicating it to all concerned regulatory agencies.

This EMP has been prepared addressing the issues like:

- Institutional setup identified/ recommended for implementation of the EMP including institutional strengthening and training.
- Preventive, mitigation & enhancement measures for minimization and abatement of the undesirable impacts caused during design, construction and operation stage.
- Environmental monitoring programme including parameters, locations and frequency of monitoring and their implementation programme to be undertaken.
- Expenditures for environmental protection measures and budget for implementation of the EMP

9.2 Institutional Capacity

The Proponent will utilize the following arrangements in the implementation of the EMP during planning and design, construction, and operation phase. The Proponent is accountable for ensuring that resources are made available to effectively implement the EMP and necessary environmental management measures arising from the project. **Table 9.1** provides details on the functions of each staff member.

Table 9.1: Functions of Staff in Implementation of EMP

Position	Responsibility
Project Manager	● Supervision of construction works. ● Schedule preparation and resource forecasting for engineering and other technical activities relating to the project
Contractor	● Undertake development of facility in accordance with contract signed with the Proponent.

	● Adhere to Proponent HSE policies, procedures and other requirements while undertaking the Project. ● Implement aspects of EMP assigned to them
Construction Manager	● Effective implementation of the EMP ● Regular performance reviews ● Corrective and/or remedial action where this may be required.
HSE Executive	● Preparation of environmental monitoring, reporting and any permit applications (if any) ● Overseeing of construction process and ensuring the implementation of avoidance and mitigation measures ● Conducting monitoring and review of EMP implementation by contractor ● Inspect the constructed facility after completion
HSE Manager	● Develop policies and procedures on environmental, social, health and safety issues. ● Oversee implementation of the EMP ● Review and analysis of monitoring results and preparation of brief reports to Project Manager ● Planning of training programs for personnel in accordance with relevant laws ● Oversee inspection of the constructed facility after completion of construction works

9.2.1 Management of Contractor

The Contractor will be responsible for the implementation of some of the EMP commitments. However, the Proponent fully recognizes that it is not absolved from

those management responsibilities. Ultimate responsibility for meeting all commitments lies with the Proponent.

The Proponent will commit the contractor to meeting the relevant responsibilities by means of specific conditions in the contracts of appointment. Where there is concern over the capacity of contractor to undertake specific activities according to the system stated here, the Proponent will provide additional training to improve the capacity of the contractor. The activities of contractor will be overseen by the Project Manager and staff as appropriate.

The Proponent will put in place the following construction phase contractor arrangements to support EMP implementation:

- Contractors will have certain key environmental line functions included in their job descriptions and performance criteria. Critical among these is the Construction Manager.
- The Construction Manager will be accountable for environmental (including social) management during the construction phase. Specific responsibilities for the Construction Manager will include Regular performance reviews and undertake corrective and/or remedial action where this may be required.
- Regular (at least monthly) liaison between the Construction Manager, the Project Manager and the HSE Manager and his/her team must be carried out. At the commencement of the construction phase, weekly meetings should occur. Meetings should review implementation of EMP requirements, highlight issues of concern, identify required interventions, and prescribe corrective actions and schedule, and allocate budget and appoint responsible parties. The Facility

Manager should receive minutes of meetings and should be invited to attend meetings at least once a month.

- A code of practice for construction teams will be prepared and implemented. This code will guide the management and behavior of construction teams. The code will include items relating to health, safety and community relations.
- Information on the implications of construction will be disseminated before construction starts.
- Contracts will be key tools in managing many potential negative impacts such as transport related incidents. They will specify required environmental and social practices.

9.3 Training and Awareness

The Proponent will ensure that all contractors' staff is inducted on health and safety, environmental and emergency response procedures. The Proponent will use written (newsletter/posters/toolbox talks) and verbal (as part of routine briefings) communication methods to raise awareness on a range of health, safety and environmental issues. This will be done in both Urdu and English languages (as appropriate) to ensure that all members of the workforce are made aware.

Environmental training will help to ensure that the requirements of the EIA and EMP are clearly understood and followed by all project personnel in the course of the project. The contractor and his HSE manager have the responsibility to provide training to all project personnel. An indicative environmental training program is provided in **Table 9.2**. The duration of this training programme will be 1-2 weeks.

Table 9.2 Training Program

Target Audience	Trainer	Contents	Schedule
All Site Personnel	Contractor HSE Manager	● Key Findings of EIA ● Environmental Enhancement Measures ● Environmental Management Plans such as: ➤ Waste Disposal Procedure ➤ Traffic Management ➤ Health and Safety Measures ➤ Noise & Dust Control ➤ Natural Resource Conservation ➤ Safe Raw and Hazardous Material Storage ➤ Material Loading and Unloading ➤ Fire Control	Prior to the Start of Project Activities

Emergency preparedness and Evacuation Housekeeping & Camp Rules Wildlife Protection Grievance Redressal			
Drivers	Contractor	- Road Safety - Road Access - Vehicle Movement Restrictions - Fugitive Emissions & Exhaust Control - Noise Reduction Measures - Oil spill Control - Loading and Unloading - Emergency Handling Plan	Before and during Operations

9.4 Impacts Mitigation and Management Measures

The detailed mitigation plan for the identified impacts during design, construction and operational phase is given in **Table 9.3**. The mitigation plan presents a listing of the mitigation measures to be taken for each identified potential impact along with the timing of implementation as well as implementation and supervision responsibility.

Table 9.3 Environmental Management Plan

Sr No	Activity/ Aspect	Objective	Mitigation Measures	Timing of Implementation	Responsibility	
					Implementation	Supervision
PLANNING & DESIGN PHASE						
1	Layout Plan and Engineering Design	To ensure the project is being constructed according to the regulatory requirements. To protect building from natural incidents such as earthquake	● All structural layout and engineering should be carried out in strict accordance with the applicable bylaws and engineering parameters. ● The proposed facility should be designed according to international standards for the prevention and control of fire and explosion hazards, including provisions for segregation of process, storage, utility, and safe areas. ● Earthquake-resistant or aseismic structures should be considered while designing or constructing the plant in order to protect plant to some or greater extent from earthquakes	During Planning and Design Phase	Architect, Contractor & Proponent	Proponent

Sr No	Activity/ Aspect	Objective	Mitigation Measures	Timing of Implementation	Responsibility	
					Implementation	Supervision
2	Cultural/ Historical Sites	To avoid any impact on cultural and historical sites	- There is no cultural or historical site present near the project site. - Moreover, the contractor will ensure that construction of the proposed facility and infrastructure will be limited within the already acquired land for the proposed project and within the existing premises of LCI Polyester Fiber Plant.	During Planning and Design Phase	Architect, Contractor & Proponent	Proponent
3	Public Participation	To gain public views, concerns and values and to build trust amongst the various stakeholders	- Proper sensitization of the community at the initial stages of the project with the aim of educating them on advantage of the project. - Involving the community on its implementation especially as casuals.	During Planning and Design Phase	Contractor	Proponent

Sr No	Activity/ Aspect	Objective	Mitigation Measures	Timing of Implementation	Responsibility	
					Implementation	Supervision
4	Construction Camps/ Material Management	To minimize the potential effect of the construction site on the surrounding environment	- Plan sites for worker camps and back up areas for stockpiling materials and equipment in advance - Consult local community and locate to use waste/barren land and non-agricultural plots.	During Planning and Design Phase	Contractor	Proponent
5	EMP Design	To ensure EMP is sufficient to control impacts and compliance with legal requirements of Punjab EPA	Make sure EMP is distributed among the contractors well in time.	During Planning and Design Phase	Contractor/ Proponent	Proponent
6	Orientation for Contractor and Workers	To ensure that the Contractor, Subcontractors and	Conducting special briefing and / or on-site training for the contractors and workers on the environmental	Before and during	Contractor	Proponent

Sr No	Activity/ Aspect	Objective	Mitigation Measures	Timing of Implementation	Responsibility	
					Implementation	Supervision
		workers understand the key environmental impacts and their relevant mitigation measures.	requirement of the project. Record attendance and achievements. Periodic progress review sessions to be conducted on regular basis	construction of work.		
7	Construction Material	To reduce the negative impacts on availability and sustainability of the materials	- All construction materials will be sourced from licensed dealers and suppliers. - The contractor will only order what will be required through accurate budgeting and estimation of actual construction requirements. - The contractor will ensure that wastage, damage or loss (through run-off, wind, etc.) of materials at the construction site is kept minimal, as these would lead	Before or during Construction Phase	Contractor	Proponent

Sr No	Activity/ Aspect	Objective	Mitigation Measures	Timing of Implementation	Responsibility	
					Implementation	Supervision
			to additional demand for and extraction or purchase of materials. In addition to the above measures, the contractor shall consider reuse of building materials and use of recycled building materials. This will lead to reduction in the number of raw materials extracted from natural resources as well as reducing impacts at the extraction sites.			
8	Plans to control environmental impacts	To avoid impacts that may occur from unplanned activities.	The following plans will be prepared before construction. - Material handling and storage - Waste Management Plan - Health & Safety Plan - Emergency Response Plan	Before Construction	Contractor	Contractor/ Proponent

Sr No	Activity/ Aspect	Objective	Mitigation Measures	Timing of Implementation	Responsibility	
					Implementation	Supervision
			- Fire Control Plan - Traffic Management plan			
9	Equipment Maintenance	To achieve best performance while working with equipment and to avoid construction delays	- Before construction, make sure every equipment/instrument to be used is in good condition. - Equipment shall be serviced or maintained on regular basis.	Before Construction	Contractor	Contractor
CONSTRUCTION PHASE						
10	Landscape and Visual Impact	To protect the aesthetic value of the site.	Proper landscaping will be done after the end of all the construction works	During Construction Phase	Contractor	Proponent

Sr No	Activity/ Aspect	Objective	Mitigation Measures	Timing of Implementation	Responsibility	
					Implementation	Supervision
11	Water Resources	To conserve the water resources of the area	- Continuous withdrawal and over pumping of groundwater will be avoided. Instead, intermittent pumping will be carried out to conserve the groundwater resource. - Water tanks of appropriate capacities will be constructed for meeting water requirements of the construction phase. Instead of using the directly pumped out groundwater, it will be stored first in these water tanks and then used as and when required. - Simultaneous abstraction would be carried out through the existing water pumps of LCI Polyester Fiber Plant. No additional pumps for the extraction of groundwater will be carried out.	During Construction Phase	Contractor	Proponent

Sr No	Activity/ Aspect	Objective	Mitigation Measures	Timing of Implementation	Responsibility	
					Implementation	Supervision
			Conservation in water usage will be practiced wherever and whenever possible. Only minimum essential quantities of water will be used according to actual water needs of different activities to avoid generation of large volume of wastewater. For example, water curing of the masonry and concrete structures will be carried out by wrapping around a soaked gunny cloth instead of direct water showering of the structure. Similarly, water from the soaking pits can be used for wetting the raw bricks and curing the masonry works. Water of the hand washouts may be used for filling flushing tanks of the closets.			

Sr No	Activity/ Aspect	Objective	Mitigation Measures	Timing of Implementation	Responsibility	
					Implementation	Supervision
			Water conservation will be encouraged at the worksite by displaying suitably worded requests on careful water usage.			

12	Water Quality	To protect groundwater quality of the area	● It will be ensured that the drainages within the construction zones are kept free of obstructions. ● All the loose soil material and stockpiled will be kept out of drains and flow-lines. ● All the stockpiling of excavated and construction materials (sand, gravel, cement, etc.), will be avoided, unless covered by tarpaulins or plastic sheets. ● All waste residuals will be disposed of at identified disposal site. ● Best effort/measures will be placed against accidental spill/ discharge. ● Regular checking and maintenance will be done of all plant and machinery to minimize the risk of fuel or lubricant leakages.	During Construction Phase	Contractor	Proponent
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Sr No	Activity/ Aspect	Objective	Mitigation Measures	Timing of Implementation	Responsibility	
					Implementation	Supervision
			- Temporary sedimentation tanks of adequate capacity will be installed for receiving and treating wastewater from all temporary worksite toilets and at the temporary container offices, if any. - Water quality monitoring will be done on quarterly basis by 3rd party.			
13	Air Quality (Fugitive, Exhaust and Gaseous Emissions)	To minimize air pollution effectively and avoid complaints due to the airborne particulate matter released to the atmosphere.	All personnel working on the project site will be trained prior to start construction on methods for minimizing air quality impacts. Training will be focused on minimizing dust and exhaust gas emissions from heavy construction machinery and vehicles.	During Construction Phase	Contractor	Proponent

Sr No	Activity/ Aspect	Objective	Mitigation Measures	Timing of Implementation	Responsibility	
					Implementation	Supervision
			● Spray water and/or wet surfaces during excavation works especially during dry seasons. ● Stockpiled soil and sand will be slightly wetted before loading, particularly in windy conditions. ● Vehicles transporting soil, sand and other construction materials will be covered. ● Speed and operation of construction vehicles will be controlled at the site. ● All bare areas will be landscaped after construction to reduce dust. ● Vehicle idling time will be prohibited. ● Diesel generator with high combustion efficiency will be selected to minimize dark smoke generation.			

Sr No	Activity/ Aspect	Objective	Mitigation Measures	Timing of Implementation	Responsibility	
					Implementation	Supervision
			- Equipment/machinery to be used will be properly tuned and maintained - Emissions monitoring will be done on quarterly basis by 3rd party.			
14	Soil Erosion	To avoid or minimize soil disturbance.	- All spoils will be disposed of as desired and the site will be restored back to its original conditions. - Excavations will be kept confined to the specified foundation spots as per the approved engineering drawings. Unnecessary excavations will be avoided. - Oils, lubricants, chemicals, and other hazardous materials will be stored safely at their designated spots, enclosures or store rooms, which will be safe	During Construction Phase	Contractor	Proponent

Sr No	Activity/ Aspect	Objective	Mitigation Measures	Timing of Implementation	Responsibility	
					Implementation	Supervision
			from rainfall and away from any potential source of fire. - All machineries and materials will be stored at the designated areas and compounds. - All the unspent and left-over materials will be completely removed offsite upon completion of construction and the site will be restored to original or near to original condition			
15	Soil Contamination	To protect soil quality of the area	- All the chemicals and oils will be stored properly in a designated area. - Any spill incidence will be immediately reported. - Spills will be immediately cleaned up - Spill kit will always be available at the site	During Construction Phase	Contractor	Proponent

Sr No	Activity/ Aspect	Objective	Mitigation Measures	Timing of Implementation	Responsibility	
					Implementation	Supervision
			- Accidental spills on open ground including any contaminated soil shall be disposed of as to a disposal site acceptable to the local authority. - Soil quality testing will be done annually by 3rd party.			
16	Noise	To minimize the potential for noise to adversely affect sensitive receptors.	- Limit pickup trucks and other small equipment to an idling time of one minute, observe a common-sense approach to vehicle use, and encourage workers to shut off vehicle engines whenever possible. - The traffic will be properly managed during loading and unloading of construction material. - Unnecessary honking of the involved machinery will be avoided.	During Construction Phase	Contractor	Proponent

Sr No	Activity/ Aspect	Objective	Mitigation Measures	Timing of Implementation	Responsibility	
					Implementation	Supervision
			- Protective gear such as earplugs, etc. will be provided to construction personnel exposed to high noise levels. - The generator to be used at the site will be enclosed in a sound dampening enclosure. - All the construction equipment and vehicles used will be in good working condition, properly lubricated and maintained to keep noise within the permissible limits. - Billboards notifying of the construction activity and timings will be displayed at various locations of the construction site			

Sr No	Activity/ Aspect	Objective	Mitigation Measures	Timing of Implementation	Responsibility	
					Implementation	Supervision
17	Solid Waste	To minimize any negative impacts associated with waste generation	- Excavation and construction waste will be recycled or reused to ensure materials that would otherwise be disposed of as waste are diverted for productive uses. - Solid waste generated during construction at construction sites will be safely disposed in defined waste disposal sites. - The wastes which are reusable/recyclable (iron bars, aluminum) will be sold to waste vendors and those which cannot be sold out (brick pieces) will be used as a filling material for leveling the depressions, subject to technical feasibility. - Construction workers and supervisory staff will be encouraged and educated to practice waste	During Construction Phase	Contractor	Proponent

Sr No	Activity/ Aspect	Objective	Mitigation Measures	Timing of Implementation	Responsibility	
					Implementation	Supervision
			minimization, reuse and recycling to reduce quantity of the waste for disposal. Open burning of solid waste will be strictly prohibited.			
18	Ecological considerations (flora & fauna)	To conserve biological resources of the project area	- All the necessary precautions will be taken to ensure minimum disturbance to the local flora and fauna. - Strict instructions will be given to all personnel working in project area to refrain from killing, capturing, or disturbing any local species of birds, reptiles or mammals encountered during project activities, except in self-defense. - Unnecessary removal of vegetation will be avoided.	During Construction Phase	Contractor	Proponent

Sr No	Activity/ Aspect	Objective	Mitigation Measures	Timing of Implementation	Responsibility	
					Implementation	Supervision
			Landscaping and gardening will be done to restore aesthetic value as well as greening of the site.			
19	Environment Health and Safety preparedness	To provide workers/employees with safe working environment	- Health Safety Plan before commencement of construction will be prepared. - Adequate warning signs will be placed at various places of the site. - Every construction worker will be provided with appropriate personal protective equipment (PPE) such as a skull guard or hard hat and safety shoes. - The Contractor will ensure the use of PPE by all workers. - Adequate first aid facilities will be provided at the project site.	During Construction Phase	Contractor	Proponent

Sr No	Activity/ Aspect	Objective	Mitigation Measures	Timing of Implementation	Responsibility	
					Implementation	Supervision
20	Fire Safety	To protect worker's life and to avoid any fire incident at site	● Firefighting equipment such as fire extinguishers, buckets and fire hydrants will be provided at strategic locations such as stores and construction areas. ● Regular inspection and servicing of the equipment will be undertaken by a reputable service provider and records of such inspections will be maintained. ● Signs such as "NO SMOKING" will be prominently displayed within the premises	During Construction Phase	Contractor	Proponent
21	First Aid	To treat any injury on time	● An adequately stocked "First Aid Box" will be placed at the site and employees will be properly trained on how to administer first aid	During Construction Phase	Contractor	Proponent

Sr No	Activity/ Aspect	Objective	Mitigation Measures	Timing of Implementation	Responsibility	
					Implementation	Supervision
22	Traffic	To smooth the traffic flow at site	● Movement of vehicles carrying construction materials will be restricted during the daytime to reduce traffic load and inconvenience to the nearby residents. ● Strategic placement of traffic police at critical intersections will be done to facilitate better flow of traffic. ● Continuous services of the police in the diversion and control of traffic will be made available.	During Construction Phase	Contractor	Proponent
23	Community Health and Safety	To protect nearby community from environmental impacts of the project	● Regular water sprinkling should be done on all construction active areas present close to sensitive receptors in order to reduce dust exposure. ● Limit the construction activities to daytime to avoid disturbance to nearby communities	During Construction Phase	Contractor	Proponent

Sr No	Activity/ Aspect	Objective	Mitigation Measures	Timing of Implementation	Responsibility	
					Implementation	Supervision
			- Regular maintenance should be done of all construction machinery to maintain noise within the permissible limits of PEQS. - Ensure that potentially disturbing construction noise is not produced outside of working hours. - Construction material delivery trucks should be planned in such way to avoid peak traffic hours. - Construction material delivery trucks must be assigned with restricted circulation hours. - Establish and enforce speed limits especially in proximity to sensitive receptors such as residential communities.			

Sr No	Activity/ Aspect	Objective	Mitigation Measures	Timing of Implementation	Responsibility	
					Implementation	Supervision
			● Install necessary safety signs and speed bumps to alert drivers that they are approaching sensitive receptors. ● Assign a person from the traffic police department to manage and handle traffic load during the peak construction times of the project. ● Inform local residents in advance regarding road closure and rerouting of vehicles and pedestrians' traffic. ● Contact with traffic police departments for maintaining traffic on roads which requires continuous police monitoring.			

Sr No	Activity/ Aspect	Objective	Mitigation Measures	Timing of Implementation	Responsibility	
					Implementation	Supervision
			- Contractors should ensure proper disposal of waste generated at site. - Contractors should strictly prohibit illegal dumping of waste. - Contractors should eliminate unnecessary container habitats that collect water in which dengue larvae can produce. - Contractor should conduct workshops at nearby residential area regarding dengue awareness and precautionary measures			
24	Influx of Labour	To protect site workers from	Create awareness among workers on proper sanitation and hygiene practices to endorse proper health	During Construction Phase	Contractor	Proponent

Sr No	Activity/ Aspect	Objective	Mitigation Measures	Timing of Implementation	Responsibility	
					Implementation	Supervision
		communicable diseases To Sensitize workers and surrounding communities on awareness and prevention of HIV/AIDS and STI To develop and enforce a strict code of conduct for	● Maintain good housekeeping practices at all project site ● Provide adequate personal hygiene facilities in good condition with adequate supply of clean water. ● Make arrangements to treat the affected workers on time to control the movement of vectors disease ● Sensitize workers and surrounding communities on awareness and prevention of HIV/AIDS and STI through training, awareness campaigns and workshops during community meetings ● Provide proper and free HIV/AIDS and STI health screening and counselling for site workers and community members			

Sr No	Activity/ Aspect	Objective	Mitigation Measures	Timing of Implementation	Responsibility	
					Implementation	Supervision
		workers to regulate behaviour in the area To avoid conflict among locals and outsiders	- Develop and enforce a strict code of conduct for workers to regulate behaviour in the local communities - Eliminate an employee who continues misconduct or lack of care, carries out duties amateurishly or inattentively, fails to conform to provisions of the contract, or persists in any conduct which is harmful to safety, health, or the protection of the environment. - Taking all sensible precautions to avert illicit, vicious conduct by or amongst the Contractor's personnel, and to preserve unity and harmony and protection of people and property on and near the site			

Sr No	Activity/ Aspect	Objective	Mitigation Measures	Timing of Implementation	Responsibility	
					Implementation	Supervision
			- Prohibiting drugs, alcohol, weapons, and ammunition on the worksite among personnel. - Site security preparations must be contained within the Bills of Quantities (BOQs) to avoid any delays which might be caused due to insecurity. - The Contractor in cooperation with the security organs must create awareness to the security situation on the ground all the times. - Appropriate fencing, security check points, gates and security guards are to be provided at the construction site to ensure the security of all equipment, machinery and materials, as well as to secure the safety of site staff.			

Sr No	Activity/ Aspect	Objective	Mitigation Measures	Timing of Implementation	Responsibility	
					Implementation	Supervision
			- The Contractor must guarantee that good relations are maintained with local communities and their leaders to help reduce the risk of vandalism and theft. - To avoid conflicts among local people on employment matter, it is proposed that the Contractor employs the locals in cooperation with local administration in unskilled and semi-skilled duties. This will reduce pressure on existing resources such as housing, schools and health facilities - Unskilled and skilled labour to be hired from the local community as far as possible to minimize on influx of immigrants into the community.			

Sr No	Activity/ Aspect	Objective	Mitigation Measures	Timing of Implementation	Responsibility	
					Implementation	Supervision
25	Child Labour	To ensure implementation on child labour policy of Pakistan	- Ensure that contractor shall have its employment policy in accordance with relevant act and labour policies in Pakistan. - Contractor shall ensure the presence of all persons at site are adults and have their proper identity card with them.	During Construction Phase	Contractor	Contractor
26	Social Impacts	To engage local workforce in the proposed project. To encourage local support for the project. To ensure minimum impacts to people	- Local labor as far as possible will be preferred for manual work. - Local educated people for office work will be hired where possible. - Claims/complaints of the people on construction nuisance/damages close to the proposed project site	During Construction Phase	Contractor/ Proponent	Contractor/ Proponent

Sr No	Activity/ Aspect	Objective	Mitigation Measures	Timing of Implementation	Responsibility	
					Implementation	Supervision
		living close to the project site.	will be considered and responded promptly by the Contractor and monitored by Proponent			
27	Grievance Redress	To ensure that the stakeholder or affected people's concerns, complaints and grievances about the project environmental performance is received recorded and replied in a systematic way	- Complaints from people will be recorded and solved on immediate basis - A booklet outlining grievance contact points will be maintained.	During Construction Phase	Contractor/ Proponent	Contractor/ Proponent
OPERATIONAL PHASE						

Sr No	Activity/ Aspect	Objective	Mitigation Measures	Timing of Implementation	Responsibility	
					Implementation	Supervision
28	Security and Site Access	To protect assets against; theft, damage or incidents that may result in a financial loss	- Security and surveillance will be planned through a layered system of check points and CCTV cameras. - Security will be ensured around the plant through distribution of suitable security lights and presence of 24-hour security guards. This will lead to improvement in the general security in the surrounding area	During Operational Phase	Proponent	Proponent
29	Exhaust Emission	To control exhaust emissions from the machinery and vehicles	- Generators to be used at the site will be properly encased and serviced regularly. - Transportation vehicles and machineries to be used will be properly and timely maintained and serviced regularly to control the emissions.	During Operational Phase	Proponent	Proponent

Sr No	Activity/ Aspect	Objective	Mitigation Measures	Timing of Implementation	Responsibility	
					Implementation	Supervision
			Emission testing will be done on quarterly basis by 3rd party.			
30	Wastewater	To effectively manage wastewater coming from the different processes of the facility	- An efficient effluent treatment plant is proposed within the plant facility to treat wastewater coming from production process - Domestic sewage will be discharged into an existing drain after treatment - Good housekeeping practices will be adopted at the site. - Wastewater sampling will be done on quarterly basis by 3rd party.	During Operational Phase	Proponent	Proponent

Sr No	Activity/ Aspect	Objective	Mitigation Measures	Timing of Implementation	Responsibility	
					Implementation	Supervision
31	Waste	To minimize any negative impacts associated with waste generation	- Designate a temporary waste storage area within the existing premises of plant - Provide separate bins for each type of waste at various places of plant. - All Recyclable waste generated from the production process will be recycled within the facility - All the non-recyclable waste will be sold to the EPA certified waste contractor. - No waste will be dumped at any location outside the plant boundary. - Records of all waste generated will be maintained. Quantities of waste disposed, recycled, or reused will be logged on a Waste Tracking Register.	During Operational Phase	Proponent	Proponent

Sr No	Activity/ Aspect	Objective	Mitigation Measures	Timing of Implementation	Responsibility	
					Implementation	Supervision
			Training will be provided to each site personnel regarding waste identification, segregation, and management of waste.			
32	Noise and Vibrations	To avoid noise pollution at the project site	- Noisy equipment/machinery will be housed in closed buildings. - Pumps will be regularly tested for an engineering fault. - Generator will be enclosed in a sound dampening enclosure. - Employees working in high noisy areas will be moved to quiet areas in order to limit their exposure. - PPEs such as ear plugs and ear muffs will be provided to the workers in the vicinity of the machinery	During Operational Phase	Proponent	Proponent

Sr No	Activity/ Aspect	Objective	Mitigation Measures	Timing of Implementation	Responsibility	
					Implementation	Supervision
			producing noise more than permissible level to avoid hearing problems. • Serviced and regularly maintained vehicles will be used. • Drivers will be sensitized to avoid unnecessary gunning of vehicle engines or hooting. • Noise monitoring will be done on quarterly basis by 3rd party.			
33	Fire Hazard	To avoid fire incidents at the site	• The whole plant will be designed and constructed according to international standards for the prevention and control of fire and explosion hazards.	During Operational Phase	Proponent	Proponent

Sr No	Activity/ Aspect	Objective	Mitigation Measures	Timing of Implementation	Responsibility	
					Implementation	Supervision
			● Routine inspection will be done to check that the area around the generator is free of clutter and no combustible material is present. ● Accidental spills will be immediately cleaned up. Workers will be trained on handling accidental spillage of flammable substances that may trigger fires. ● Fire extinguishers, fire hydrants and fire alarms will be provided at convenient locations within the facility. These equipments will be regularly inspected and maintained by a reputable fire security company. ● Fire drills will be conducted at least biannually to ensure that workers are conversant with the action to take in the event of fire or explosions.			

Sr No	Activity/ Aspect	Objective	Mitigation Measures	Timing of Implementation	Responsibility	
					Implementation	Supervision
			- Fire awareness materials will be placed in strategic locations within the facility to educate the workers and visitors on what to do in the event of fire. - An elaborate emergency response plan will be developed to address the risks associated with the facility 's operations. "No smoking signs" will be displayed as appropriate and measures taken against those not adhering to this order.			
34	Fauna and flora	To protect existing floral and faunal species present at the project site	- The proponent shall plan an extensive green belt programme. - Strict instructions should be given to all personnel of the plant to refrain from killing, capturing or	During Operational Phase	Proponent	Proponent

Sr No	Activity/ Aspect	Objective	Mitigation Measures	Timing of Implementation	Responsibility	
					Implementation	Supervision
			disturbing any species of bird, reptile or mammal except in self-defence.			
35	Social Impacts	To engage local workforce in the proposed project.	- Local labour as far as possible will be preferred for the maintenance work - Local educated people for office work will be hired where possible.	During Operational Phase	Proponent	Proponent

9.5 Monitoring Plan

9.5.1 Effects Monitoring

The actual impacts on physical, biological, and socio-economic receptor of the project area due to project activities will be monitored. The Effect Monitoring is done to identify any effects either not anticipated in EIA or exceeding the level anticipated in the mitigation plan so that appropriate mitigation measures can be adopted on time. The common theme of Effect Monitoring is the proper management of environmental risks and uncertainties. The Effect monitoring has following objectives:

- To verify that the impact of the proposed project is within acceptable limits, thus establishing credibility.
- To facilitate research and development by documenting the effects of the proposed project that can be used to validate impact- predication techniques and provided a basis for more accurate prediction of future impact.
- In case of adverse impacts or sudden changes in the anticipated impacts immediately inform the Proponent and other regulatory agencies so that the corrective actions can be taken such as modification of mitigation measures and inclusion of additional measures to minimize the effects, control the timing, location and level of certain project activities. The detailed effects monitoring plan for the proposed project is given in **Table 9.4**.

Table 9.4 Effects Monitoring Plan (Construction and Operational Phase)

Sr No.	Aspects	Parameters to be monitored	Monitoring Frequency	Method	Monitoring Location	Responsibility
Environmental Monitoring Schedule for Construction Phase						
1	Ambient Air	SO ₂ , NO _x , CO, PM ₁₀ , PM _{2.5} ,	Quarterly	Instrumental monitoring, technical inspection of machinery, visual control	Nearest Sensitive Receptors Construction camp All open work fronts	Proponent
2	Vehicular Emissions	SO ₂ , NO _x , CO, HC, Smoke, noise	Quarterly	Instrumental monitoring, technical inspection of machinery	Construction Vehicles	Proponent
3	Gaseous Emissions	SO ₂ , NO _x , CO, PM	Quarterly	Instrumental monitoring, technical inspection of machinery	Near construction machinery and standby generator	Proponent
4	Noise	Day and night time levels on Db (A) Scale (min-max)	Quarterly	Instrumental monitoring	Potentially affected sensitive receptors Near construction machinery	Proponent

5	Soil	pH, EC, calcium, magnesium, iron, fluoride, sulphide, sulphate, zinc, barium, sodium, potassium	Annually	Laboratory control	Construction Camps Raw material and waste storage areas	Proponent
6	Water Quality	Total coliform, fecal coliform, <i>E. Coli</i> , pH, TDS, total hardness, alkalinity, nitrates, chlorides, sodium, iron, zinc, lead, manganese	Quarterly	Laboratory control	Groundwater	Proponent
7	Wastewater quality	pH, TDS, TSS, BOD, COD,	Quarterly	Laboratory control	Septic Tank	Proponent

		chloride, iron, nitrates			Nearby drain	
8	Grievance	Number and record of complaints	Regularly	Complaint Management Register	Site workers Sensitive Receptors	Proponent
9	Accidents	Frequency of accidents, No. of injuries and care provided	Regularly	Visual/ site inspection	Construction Site	Proponent
Environmental Monitoring Schedule for Operation Phase						
10	Water quality supplied to office	Total coliform, fecal coliform, <i>E. Coli</i> , pH, TDS, total hardness, alkalinity, nitrates, chlorides,	Quarterly	Laboratory control	Groundwater	Proponent

	staff/resident s	sodium, iron, zinc, lead, manganese				
11	Ambient Air	SO ₂ , NO _x , CO, PM ₁₀ , PM _{2.5} , HC	Quarterl y	Instrumental monitoring	Surroundings of the plant	Proponent
12	Gaseous Emissions	SO ₂ , NO _x , CO, PM	Quarterl y	Instrumental monitoring, technical inspection of machinery	Near Generators And Car Parking	Proponent
13	Noise	Day and night time levels on Db (A) Scale (min-max)	Quarterl y	Instrumental monitoring	Near Noisy Machinery (motors and generators) Nearest Sensitive Receptors	Proponent
14	Wastewater quality	pH, TDS, TSS, BOD, COD, chloride, iron, nitrates	Quarterl y	Laboratory control	ETP and Site Drain	Proponent

15	Waste	Record of waste generation and disposal	Daily	Visual/Site inspection	Whole facility	Proponent
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9.5.2 Compliance Monitoring

During the construction phase, the Proponent will monitor and inspect contractor's written records to demonstrate compliance with the EMP. This compliance monitoring will verify that the responsible parties are implementing the specifications contained in the EMP. Compliance will mean that the contractor is fulfilling contractual obligations. To determine the effectiveness of the EMP, the Proponent will use a series of internal and external inspections and audits:

- Internal environmental, health and safety inspections will be carried out once every week by HSE Executive;
- Minor non-conformances will be discussed during the inspection and recorded as a finding in the inspection report. Major non-conformances will be formally reported as an incident and will be subject to the Proponent's existing incident reporting and handling procedures.
- HSE Manager, will arrange for initial and subsequent environmental audits and will provide relevant information required by relevant authorities including EPA Punjab. The audit will be carried out in accordance with Punjab Environmental Protection Act 1997 (Amended 2012) and its subsidiary legislation, IEE/EIA Regulations, 2022. Any negative findings arising from the audits will be addressed accordingly.

9.6 Incident Handling and Reporting

An incident can arise from the following:

- Significant non-conformance with the EMP identified during an internal inspection
- Any non-conformance identified by either the authorities or an external audit
- Accidents or spills resulting in potential or actual environmental harm
- Significant complaints received from any source.

All incidents will be formally recorded and noted in the General/Complaint Register.

9.7 Checking and Corrective Action

Checking and if necessary, implementing corrective action, to ensure that required EMP management activities are being implemented and desired outcomes are achieved. As such this component includes four key activities namely:

- Monitoring selected environmental quality variables
- Ongoing inspections of the operational controls and general state of the operations.
- Internal audits to assess the robustness of the EMP or to focus on a particular performance issue.
- External audits to provide independent verification of the efficacy of the EMP.

9.8 Reporting

The findings of all of the above will be structured into instructive reporting that provides information to all required parties on EHS performance, together with clearly defined corrective action where this is seen to be required. Both the monitoring and inspections are to be reported continuously.

9.9 Management Review

The Proponent will organize for formal management review at defined intervals both during construction and operational phase. The purpose of the management review is for senior project management to review the environmental management performance during the preceding period and to propose measures for improving that performance in the spirit of continuous improvement.

9.10 Liaison

Throughout the project cycle, the Proponent will liaise with authorities especially EPA-Punjab to ensure on going feedback on the environment performance of the project.

9.11 Environmental Budgeting

Table 9.5 presents the breakdown of the total environmental budget allocated for this project.

Table 9.5 Cost Estimates for Environmental Management

Sr. No.	Item	Rs.
1	Water Sampling & Testing	150,000
2	Wastewater Sampling & Testing	180,000
3	Vehicular Emission Testing	30,000
4	Air Quality Monitoring	150,000
5	*Purchase of PPEs	450,000
6	Maintenance of Equipment	200,000
7	Waste Disposal	100,000
8	EHS Training	75,000
9	Tree Plantation	200,000
10	Firefighting	300,000
	Sub Total	Rs. 1,835,000

*PPE's cost will reduce subsequently each year as capital investment is made in first year.

CHAPTER 10

STAKEHOLDER CONSULTATION

Chapter Ten

STAKEHOLDER CONSULTATION

10.1 Involvement of Stakeholders/ Public Consultation

The concept of public involvement is encouraging people to share their opinions. This activity aims to guarantee that public beliefs, concerns, and preferences are taken into account while making choices. Information and notification, strictly speaking, are the preconditions of meaningful public involvement. On its own, information disclosure is not an enough provision in public involvement for an audit of a major project. The term "consultation" refers to a process of exchanging information in order to get input from stakeholders on a project and its potential consequences. Participation is a more interactive way of involving the public in addressing issues, identifying areas of agreement and disagreement, and attempting to find common ground. As previous experience shows that certain potentially contentious issues never get to the public domain if the correct consultation process is not maintained from the conceptual stage of any development. For this project, proponent and the consultant have maintained a steady consultation process with all relevant parties, to ensure that all issues of concern are rationalized and sorted out prior to implementation of proposed project.

10.2 Objectives of Stakeholder Engagement & Consultation

The objectives of embarking on the consultations process for the project are:

- Inform and educate to avoid misunderstandings about the proposed project/development

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- Identify problems, concerns and needs.
 - Obtain feedback.
 - Learn through local knowledge and understanding, particularly for environmental.
 - Social baseline feedback
 - Dissemination of information on the project
 - Promote ownership and enhance social acceptability.
 - Build trust amongst the various stakeholders.
 - Evaluate alternatives and seek solutions.

This section involves communication of possible impacts and concerns with;

- Proponents Environmental Management Team
- The responsible authority
- Other departments and agencies
- Environmental Practitioners and experts
- Affected and wider community

10.3 Proponent's Environmental Management Team

Discussion was carried out with LCI Limited Animal Health Business environmental management team, following table presents list of Interviewed Personnel.

Table 10.1: List of Interviewed Personnel from LCI Limited

Names	Designation	Organization	Contact
Mr. Arslan Ahmed	HS&E Executive	LCI Limited	0321-4466907
Mr. Shahid Hussain	Senior Admin	LCI Limited.	0308-8884391

Officer

Mr. Arslan Ahmed (HSE Executive) said that the proposed production of quality BOPET Veterinary Medicines will fulfill local and international requirements of industries, and will contribute towards the growth of country and create job opportunities for the local inhabitants. Mr. Shahid Hussain (Senior Admin Manager) ensured that every measure will be taken to make the project environment friendly during construction and operation phases. The proposed process won't cause pollution as solid waste to be generated during manufacturing will be reused and recycled. There will be no generation of process wastewater; however, the municipal wastewater will be disposed-off properly after treatment in the batch type portable Waste Water treatment Plant. He further said that the project will provide jobs to the locals during construction and operation phases.

10.4 The Responsible Authority

Findings of the consultations with Responsible Authority/EPA's team are summarized in below table.

Table 10.2: Views of Responsible Authority

Sr. No.	Name	Designation / Department	View / Concerns
1.	Mr. Rizwan	Inspector, Environmental Protection Department, Sheikhupura	He responded in a positive manner towards the proposed project. Moreover, he suggested considering all guidelines of Punjab EPA during preparation of Environmental Impact Assessment. He also emphasized to develop and

implement detailed Environmental
Management and monitoring Plan

There are many important reasons to establish and maintain good working relationships with governmental authorities at different levels, and to keep them informed about project's activities and anticipated impacts. Government support can be critical to the success of a project and routine engagement with various regulatory and public service authorities is often required as part of doing business. On a practical level, local government authorities may have long-established relationships with project-affected communities and other local and national stakeholder groups, and as such can play a role in convening and facilitating discussions between the project and stakeholder representative.

a. Objectives

The objectives behind the consultation with government officials were,

- To provide information about the proposed project
- To resolve and avoid conflicts.
- To establish areas of co-operation and development
- To provide an opportunity to influence project design in a positive manner.
- To tap information on key environmental and social baseline of the project area
- To manage expectations and misconceptions regarding the project
- To provide opportunities to discuss their opinions and concerns.

b. Methodology

Various government officials were interviewed by ECO team during visit. Following Table presents list of consulted government departments and their officials.

Table 10.3: List of Government Officials Contacted

Sr. No.	Name	Designation	Department
1.	Ms. Farwa Rasool	Assistant Director	Department of Fisheries Cell: 0304-2858979 Address: PX5M+JC3, Allama Iqbal Park, Sheikhupura
2.	Ch. Waqar Ahmad	Civil Defense Officer	Department of Civil Defense Cell: 0300-4195434 Address: Press Club Road Opposite MC Girls School, Allama Iqbal Park, Sheikhupura,
3.	Mr. Najam ul Hassan	Head Draftsman (Rachna Drainage Division)	Irrigation Department Cell: 0321-4038294 Address: Irrigation complex, Civil Lines, Sheikhupura, Punjab

Findings of government consultation are summarized as follows;

- Ms. Farwa Rasool (Assistant Director, Fisheries Department) suggested proper treatment and disposal of liquid waste of proposed industrial unit so that it does not pollute the water resources and ultimately threaten its aquatic life.
- Ch. Waqar Ahmad (Civil Defense Officer) responded in a positive manner and said this project will bring economic prosperity in the area. He also recommended the

proponent to plant more and more trees particularly of native species in the proposed project vicinity

- Mr. Najam ul Hassan (Head Draftsman, Rachna Drainage Division) explained that the owner of the proposed project should be bound to comply with environmental regulations/standards. He further told us that industries are encouraged to install wastewater treatment plant in order to avoid water pollution problems as wastewater is one of the main environmental concerns.

In short, all officials contacted responded in a positive manner and gave useful feedback on possible environmental impacts and control measures of proposed projects. However, the proponent should encourage public welfare projects like tree plantation, free medical camps, and education programs for the local community in future. Feedback forms of consultation with Government officials are provided as Annexure-J.

CONSULTATION WITH GOVERNMENT OFFICIALS



Mr. Najam ul Hassan (Head Draftsman (Rachna Drainage Division), Irrigation Department,
Sheikhupura



Ch. Waqar Ahmad (Civil Defense Officer), Department of Civil Defense, Sheikhupura



Farwa Rasool (Assistant Director), Fisheries Department, Sheikhupura

10.5 Consultation with Environmental Experts and Practitioners

Environmental experts from different universities and other sectors were interviewed telephonically to get their expert opinion. List of environmental experts interviewed is given in Table 10.4.

Table 10.4 List of Environmental Practitioners & Expert

Sr. No.	Name	Department / Designation
1.	Dr. Kausar Jamal Cheema	Environmental Specialist at Ex- HOD Environmental Science Department, LCWU Lahore.
2.	Mr. Muhammad Waqar	Lecturer at College of Earth and Environmental Sciences, University of The Punjab, Lahore
3.	Dr. Ali Kamran	Solid Waste Expert

Findings of consultation with Environmental Experts are summarized as follows;

- Dr. Cheema was much concerned about detailed impact assessment of the project, covering each aspect. She emphasized on selection of best suitable site, having minimum environmental and social impacts. She was of the view that biodiversity of the area should not be damaged and proper management should be done. She proposed that environmental monitoring (air, water, soil etc.) should be done on regular basis. She said that SOP's for each practice should be designed and implemented throughout the project phase, and said that proper environmental and safety audits should be conducted. She said that latest technologies with better result should be used in the project, environmental and safety trainings should be arranged for the workers to avoid any mishap.

-
- Mr. Muhammad Waqar strongly endorsed that compliance with environmental standards will lower air, water and soil pollution.
 - Dr. Ali Kamran appreciated that the proponent will install recycling plant where they will recycle/recused all the plastic solid waste generated during manufacturing process.

10.6 Consultation with Affected and Wider Community

a. Methodology

The project team comprising of environmentalists and sociologists consulted the people residing around the project area. The responses from different stakeholders were captured via interviews and questionnaires. All the obtained feedbacks were recorded in the field notebook.

b. Project Response

The majority people of the nearby communities are strongly in favor of the proposed project because they think earning at any level is more important than any other thing. They have the perspective of healthy future which will bring prosperity to their young ones. They also said that such projects will pave the path of unemployment. As soon as these projects will commence; it will open the door of employment opportunities during construction phase and afterwards. On the other hand, 2% of people seemed less optimistic about the project, as they said that such projects will bring disturbance to them during construction and operation phase as they might lead to public nuisance i.e., water pollution and air pollution. They explained if mitigation measures would be taken and regular monitoring will be carried out, then they would have no objection.

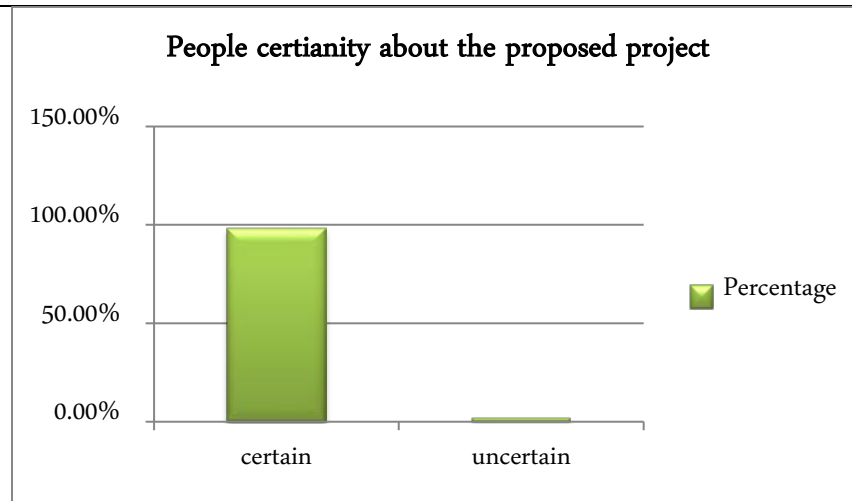


Figure 10.1 People's certainty about the project

It is concluded from the feedback of stakeholders that if the proposed project is not harming the natural and green environment, then this project is environment friendly and without any hesitation and deterioration under risk we can commence the project. This will enhance the development of the country and people will get desirable result. Feedback forms of consultation with local community are provided as Annexure-K.

PICTORIAL PROFILE OF CONSULTATION WITH AFFECTED AND WIDER COMMUNITY



Environmental Impact Assessment (EIA) Report
Construction of Veterinary Medicine Plant by LCI Limited
30-Km Lahore-Sheikhupura Road-District Sheikhupura.





Environmental Impact Assessment (EIA) Report
Construction of Veterinary Medicine Plant by LCI Limited
30-Km Lahore-Sheikhupura Road-District Sheikhupura.





CHAPTER 11

CONCLUSION

CHAPTER ELEVEN

CONCLUSION

The EIA of the proposed project of LCI Limited Animal Health Business has achieved the following goals:

- Identification of national and provincial environmental regulatory requirements that apply to the proposed development activities.
- Identification of the environmental features of the project area and the likely impacts of the project on the environment.
- Recommendation of appropriate mitigation measures that proponent will incorporate into the project design to eliminate or mitigate all adverse environmental impacts.

Baseline environmental and socioeconomic information was collected from a variety of sources including published literature and field surveys. The information collected was used to compose profiles of the natural and socioeconomic environments likely to be affected by the project. Information for the section describing the project came mainly from Proponent. An assessment was then made of the potential impacts of the described project on the area's natural and socioeconomic environments.

The impacts of the planned activities in the project area will be insignificant, provided the generic mitigation measures proposed in this report will be implemented. In areas where these activities may have a significant impact, additional mitigation measures are given to reduce impacts to as low as reasonably possible.

After assessing the proposed project activities and investigating the project area, the environmental consultants, Environmental Consultancies and Options (ECO) have concluded that:

"If the activities are undertaken as proposed and described in this report, and the recommended mitigation and environmental management measures are implemented/adopted, the project will not result in any long-term or significant impacts on the local community or the environment".

ANNEXURE-A

GLOSSARY

EIA (Environmental Impact Assessment)

It is the process of identifying, predicting, evaluating, and mitigating of effects of biophysical, social and other relevant proposed projects and physical activities prior to major decisions and commitments being made.

IEE (Initial Environment Examination)

Initial examination of projects for identification of hazards of project.

EMP (Environmental Management Plan)

An EMP is a site-specific plan developed to ensure that all necessary measures are identified and implemented to protect the environment and comply with environmental legislation.

Land acquisition

Land acquisition is the power of the union or a state government in India to acquire private land for the purpose of industrialization, development of infrastructural facilities or urbanization of the private land, and to compensate the affected land-owners for their rehabilitation and resettlement.

Environmental Impact

Any change that a project or activity may cause in the environment, including any effect of any such change in: the quality of soil, water and air.

Contamination

The action or state of making or being made impure by polluting or poisoning.

Baseline Study

A baseline study is an analysis of the current situation to identify the starting points for a programme or project.

Diesel Generator

Diesel generators use a diesel engine and an alternator to generate electrical energy. They are commonly used for back-up or stand-by power. Benefits of a diesel generator include quick and automatic start up during power outages.

Topography

Physical features of any area including soil, water and air are called topography.

Geography

Geography is the study of places and the relationships between people and their environments

PEPA (Pakistan Environmental Protection Act 1997)

An act to provide the protection, conservation, rehabilitation and improvement of environment, for the prevention and control of pollution and promotion of sustainable development.

Water Abstraction

Water abstraction is the process of taking water from any source, either temporarily or permanently for irrigation, industry, recreation, flood control or treatment to produce drinking water.

Soil Erosion

The displacement of the upper layer of soil; it is a form of soil degradation

Solid Waste

Solid waste refers to the range of garbage materials arising from animal and human activities that are discarded as unwanted and useless.

Fauna

Word used for combination of all the species of animals.

Flora

Word used for combination of all the species of plants.

Stakeholder

A stakeholder is a party that has an interest in a company and can either affect or be affected by the business.

NOC (No Objection Certificate): It is a kind of clearance issued by EPA necessary.

ANNEXURE-B

LIST OF ABBREVIATIONS

BOD	Biological Oxygen Demand
CO	Carbon Monoxide
COD	Chemical Oxygen Demand
dB	Decibel
DRAP	Drug Regularity Authority of Pakistan
ECO	Environmental Consultancies & Options
EIA	Environmental Impact Assessment
EMP	Environmental Management Plan
EPA	Environmental Protection Agency
EPD	Environmental Protection Department
ETP	Effluent Treatment Plant
FTIS	Fourier-transform infrared spectroscopy
GEL	Global Eco Laboratories
GT	Global Technologies
GWM	Global Waste Management
HPLC	High-performance liquid chromatography
HVAC	Heating, Ventilation, and Air Conditioning
IEE	Initial Environmental Examination
LCI	Lucky Core Industries
MCCB	Molded Case Circuit Breaker
MSDS	Material Safety Data Sheets
MTS	Manual Transfer Switch
NGO	Non-Governmental Organization
NOC	No Objection Certificate
NO_x	Oxides of Nitrogen
NS	Not Specified
PEPA	Punjab Environmental Protection Agency

PEQS	Punjab Environmental Quality Standards
PM	Particulate Matter
PPE	Personal Protective Equipment
QC	Quality Control
R & D	Research and Development
RO	Reverse Osmosis Plant
SO_x	Oxides of Sulfur
TDS	Total Dissolved Solids
TSS	Total Suspended Solids

ANNEXURE-C

SOCIO-ECONOMIC SURVEY & HEALTH SURVEY
QUESTIONNAIRE

Q. 1. Name of the respondent: -----

Q. 2. Present Residential Address

Q. 3. Gender:

1-Male ☐

2- Female ☐

Q. 4. Age of the respondent: -----

Q. 5. What is your marital status?

1- Single ☐ 2- Married ☐ 3- Divorced ☐ 4- Widow/Widower ☐

Q. 6. Education Level

1-Illiterate ☐

2- Primary ☐

3 - Middle ☐

4- Secondary ☐

5- Higher Secondary ☐

6- Graduate ☐

7- Post Graduate ☐

8- Deeni Uloom ☐

Q. 7. Employment Status

1- Unemployed ☐

2-Employed ☐

3- Housewife ☐

4- Student ☐

Q. 8. Type of Employment

1- Govt. Employee ☐

2- Private Employee ☐

3-Labor class ☐

4- Business ☐

5- Any other ☐

Q. 9. Personal Income (Monthly average)

1- Rs. 1,000---10,000 ☐

2- Rs. 10,001---20,000 ☐

3- Rs. 20,001-30,000 ☐

4- Rs. above 30,000 ☐

Q. 10. Other sources of income?

1- Over Time ☐

2- Part time ☐

3- Private work ☐

4- Other ☐

Q.11. How many earning members are there in your family?

1- 1 ☐

2- 2 ☐

3- 3 ☐

4- 4 ☐ 5- 5 & above ☐

Q. 12. Which family system do you belong?

1- Joint ☐ 2- Separate ☐

Q. 13. How many people are there in your household?

1- 1-5 persons ☐ 2- 6-10 persons ☐ 3- 11-15 persons ☐
4- Above 15 ☐

Q. 14. How many children are there in your house?

1- 1 – 3 ☐ 2- 4 – 7 ☐ 3- Above ☐

Q. 15. What is the type of the ownership of your house?

1- Self Owned ☐ 2- Rented ☐

Q. 16. If rented how much rent you paid?

1- 1000—2000 ☐ 2- 2001--- 3000 ☐ 3- 3001--- 4000 ☐
4- 4001--- 5000 ☐ 5- 5001----6000 ☐ 6- 6001---7000 ☐
7- 7001----8000 ☐ 8- 8001---9000 ☐ 9- 9001---10000 & above ☐

Q. 17. Nature of construction of your house:

1-Pacca ☐ 2-Semi-Pacca ☐ 3-Katcha ☐
4-Temporary settlement ☐

Q. 18. Which of the following facilities are available in your house?

1-Electricity ☐ 2-Water Supply ☐ 3-Gas ☐
4-Telephone ☐ 5- Sewerage ☐ 6-other ☐

Q. 19. Is there any social welfare trust in your area?

1- Yes ☐ 2- No ☐

Q. 20. Nature of social welfare trust in your area?

1- NGO ☐ 2- Vocational training institute ☐ 3- Women welfares center ☐
4- Women health care centers ☐ 5- Any other.....☐

Q. 21. Are you satisfied with the standard of the Educational Institutions in your area?

1- Yes ☐ 2- No ☐

Q. 22. Are you in the favor of proposed project in your area?

1-Yes ☐ 2- No ☐

Q. 23. What are the benefits of the proposed project for local community?

1- ☐ 2- ☐ 3- ☐
4- ☐ 5- ☐

Q. 24. Is it become a source of development for the local community?

1- Yes ☐ 2- No ☐

Q. 25. How do the project activities affect the environment?

1- By contaminated Water ☐ 2- By polluted Air ☐

3- By creating noise pollution ☐ 3- Any other ☐

5- All of the above.....☐

6-Will not affect if the pollution is controlled at the sources ☐

Q. 26. Do you have problem in the Availability for the following facilities?

1- Education ☐ 2- Job Opportunities ☐ 3- Transport ☐

4- Recreational Places ☐ 5- Health services ☐ 6- Any other..... ☐

7- None of them.....☐

Q. 27. Is there any solution for the particular issue?

1- No ☐ 2- Yes ☐

Q. 28. Common diseases of an area?

1- 2- 3-

4- 5-

Q. 29. Occupation of the Community inhabitants?

1- Business 2- Agriculture 3- Jobs

4- Small Industries 5- Others

Q. 30. Do you have any recommendation for the improvement of your area?

.....

.....

Q. 31. Is there any disease particularly associated with project activities?

1- 2- 3-

4- 5-

ANNEXURE-D

Environment Practitioners/Specialist

Environmentalist

- Dr. Kausar Jamal Cheema
- Dr. Saamia Saif
- Dr. Asim Mehmood
- Munazza Khan
- Muhammad Shuaib Kabeer
- Mustafain Haider

Sociologist

- Mr Muhammad Amir

Ecologist

- Dr. Farooq Ahmed
- Mr Shehzad Ashraf

ANNEXURE-E

PROJECT TEAM AND RESPONSIBILITIES

NAME	POSITION	QUALIFICATION	Responsibilities
Dr. Asim Mahmood	CEO	PhD. & MBA	Mr. Asim would be responsible for: • Environmental Assessment& Management. • Supervision of monitoring team for air water noise and soil analysis. • Preparation of technical EMP
Dr. Saamia Saif	Director	PhD. (Environmental Science & Management)	Ms. Saamia would be responsible for: • Report writing • Field surveys and consultation with stakeholders • Preparation of Environment monitoring plan • Preparation of technical EMP • Identification of sensitive receptors
Dr. Kausar Jamal Cheema	Environmentalist	PhD	Dr. Kausar will be responsible for: • Capacity building & training • Conducting and monitoring of health assessment surveys • Environment health risk assessment and management
Dr. Farooq Ahmed	Environmentalist	PhD. Forestry	Dr. Farooq would be responsible for: • Biodiversity assessment • Detailed flora fauna survey of project sites • Identification of threaten and endangered species • Project impacts on flora and fauna
Mr. Muhammad Amir	Sociologist	MA. Sociology	Mr. Amir would be responsible for: • Detailed social survey of project sites • Social impact assessment
Ms. Sunaina Ashtaq	Project Manager (Environmentalist)	M.Phil. (Environmental Science)	Ms. Sunaina would be responsible for: • Detailed survey of project sites • Socio-Economic survey • Social Assessment • Quality Check

Mr. Mustafain Haider	Project Manager (Environmental)	M.Phil. (Environmental Science)	- Mr. Mustafain would be responsible for: - Detailed flora and fauna survey of project sites - Site Monitoring - Socio-Economic survey & analysis - Risk Assessment (OHS & EMP)
Ms. Munazza Khan	Project Manager (Environmental)	M.Phil. (Environmental Science)	- Ms. Munazza would be responsible for - Detailed survey of project sites - Detailed flora and fauna survey of project sites - Environmental Assessment - Socio-Economic survey & analysis - Risk Assessment (OHS & EMP) - Report Writing - Quality Check
Mr. Muhammad Shuaib Kabeer	Assistant Manager Project (Environmental)	MPhil. (Environmental Sciences)	- Mr. Shuaib would be responsible for - Environmental Assessment - Socio-Economic survey & analysis - Risk Assessment (OHS & EMP) - Report Writing - Quality Check
Mr. Usman Sheikh	Assistant Manager Project (Environmental)	B.S (Environmental Science)	- Mr. Usman would be responsible for - Detailed survey of project sites - Socio-Economic survey - Social Assessment - Liaison with EPA
Mr. Arsalan Shahid	Project Manager	MBA	- Mr. Arsalan would be responsible for - Detailed survey of project sites - Quality Check - Liaison with EPA and Proponent

Mr. Muhammad Asim	Chemist	M.Sc.	Mr. Asim would be responsible for: • Detailed survey of project sites • Soil & water samples collection • Onsite Monitoring • Analytical analysis of samples
Mr. Muhammad Asim	Field Analyst	BSc (Chemistry)	Mr. Asim would be responsible for • Soil & water samples collection • Onsite Monitoring • Analytical analysis
Mr. Tariq Naseem	Project Fauna & Flora Expert	MSC Environmental Sciences	Mr. Tariq would be responsible for • Consultation with local community • Consultation with Government officials • Fauna & Flora study of the proposed site

ANNEXURE-F

TERMS OF REFERENCE FOR EIA STUDY

Title of the Assignment	Environmental Impact Assessment (EIA) Report Construction of Veterinary Medicine Plant by LCI Limited 30-Km Lahore-Sheikhupura Road-District Sheikhupura.
Project Total Cost	600 Million PKR
Implementation Period	1.5 Year
Location of the Assignment	30-KM Lahore-Sheikhupura Road District Sheikhupura

M/S LCI Limited-Animal Health Business-The Proponent

To evaluate likely impacts/risks associated with the proposed Installation of Veterinary Medicine Plant on various components of the environment and to achieve certain environmental objectives besides the existing local legal requirements, M/s Lucky Core Industries (LCI) Limited has hired Environmental Consultancies & Options (ECO) to carry out Environmental Impact Assessment (EIA) study of the proposed project located at LCI Limited Polyester Fiber Plant, District Sheikhupura.

Therefore, ECO has carried out detailed impact assessment study covering all the features of the environment i.e., physical, ecological, and socio-economic. The outcome of the study is the EIA report which will be submitted to Punjab EPA to obtain Environmental Approval/NOC for the construction phase.

Name: Mr. Ghazanfar Mahmood

Address: 30-KM Lahore Sheikhupura Road District Sheikhupura

Phone No: +92-21-3565-9506

Terms of Reference (TORs)

1.0 TERMS OF REFERENCE

The term of reference (TOR) will include the following:

1.1 Executive Summary

This section would allow for a clear understanding of the project proposal and summarize the significant results of the EIA study, e.g., positive and negative environmental, social and economic impacts, options considered, reasons for selection of the proposed option and the measures to be implemented to prevent or mitigate negative impacts or capitalize on positive impacts.

1.2 Introduction

In this section the context of the project and the EIA would be explained, the delineation and justification of the boundary of the study area, general methodology, assumptions and constraints of the study.

1.3 Comprehensive Description of the Proposed Project

This should include but not be limited to the following:

1.3.1 The Proponent

This section should provide a description/profile of the company proposing to carry out the development project, profile of principals of the company, and business alliances of the company.

1.3.2 Project Concept & Description

This section should provide detailed description of the project including but not limited to:

- History and background of the project,
- Site location, Site Layout,

Expected project components and alternatives that may be considered by the developer

- Schematic plans,
- Estimated cost of the proposed development,
- Proposed project milestones,

If the project is to be done on a phased basis, all phases should be clearly defined and the relevant time schedules provided, supported by maps, diagrams or any other appropriate visual aids,

- Proposed times of operation of the facilities,
- Construction methods and equipment,
- Construction materials.

Terms of Reference (TORs)

1.3.3 Project Infrastructure

Overview of the proposed infrastructure and structural components of the Projects, including but not limited to the conceptual/preliminary design for:

- Water storage and supply,
- Drainage,
- Sewage disposal,
- Solid waste disposal,
- Transportation systems (on land and water),
- Electrical power (fossil energy, wind, sun, wave and tidal),
- Communications and other utility requirements
- Supporting infrastructure on the mainland,

1.3.4 Project Operations & Maintenance

Proposed operations and maintenance activities including but not limited to:

- Equipment and machinery to be involved, and how these will be mobilized,
- Areas to be used for storage of machinery and material should be clearly indicated,
- Transportation systems or arrangement pre-, during- and post – construction,
- Workforce requirements, including proposals for mobilization and accommodation,
- Health, safety and security systems.

1.4 Description of the Existing Environment

An inventory and assessment of the natural resources in the study area should be conducted for a period equivalent to at least one (1) calendar year adequately representing seasonal, diurnal and nocturnal variations.

Secondary data can be used in the assessment as long as it is representative and relevant. The source of all data (existing or collected for the study) would be disclosed; who collected the information, when and where. All limitations and assumption made must be clearly stated.

The proponent shall submit an inventory of existing data and a statement on the data gaps for review by EPA before starting the EIA.

The following aspects must be described in this section:

1.4.1 Physical

Terms of Reference (TORs)

Morphology and morphological processes (Topographical features including bathymetry of surrounding waters Soils & geology of the area), including but not limited to: geological structure, surrounding water bodies, mineral resource potential of the area under study and Existing Infrastructure

- Climate (wind and precipitation), run-off and drainage
- Data to support the use of alternative energy sources (wind solar, wave)
- Air quality
- Water quality
- Identify source of freshwater, including drinking water supply

1.4.2 Natural Hazards

This section would include the following:

- A study on Hurricanes and storm surges in the area under study
- Earthquakes and landslides and the history of such events in the area under study

1.4.3 Biological

This section would include the consideration of the following:

- Flora and fauna survey of project area and surrounding environment,
- Detailed qualitative and quantitative assessment of the economic zone, including inventory (list) and distribution (map) of species.
- Detailed description and qualitative and quantitative assessment of natural habitats and communities including but not limited to area where the project would be initiated;
- Commentary on the ecological health and functions, threats and conservation significance of terrestrial and fresh water habitats.
- Species interdependence, habitats/niche specificity and community structure and diversity would also be considered.

The field data collected shall include, but is not limited to:

- Species lists and distribution for each community (ecosystem) Migratory species, insects and micro-organisms should also be considered,
- A habitat map of the area
- Other benthic features of the proposed development areas as well as the areas of potential impact

Terms of Reference (TORs)

- Vegetation profile
- Fish and other fresh water species

1.4.4 Heritage

This section would include the assessment of the existing archeological structures of the area under study and probability of loss of archeological structures during the construction and operation of any project.

1.4.5 Human/Social

This section of the EIA would include the assessment of following:

- Demography, regional setting, location assessment and current and potential land-use
- Description
 - of existing infrastructure such as transportation, electricity, solid waste disposal; water and telecommunications, and public health and safety
- Identification of all the existing resource users (including traditional users) ranging from subsistence utilization of the natural resources to commercial activities
- Public perception of the proposed project inclusive of potential impacts on social, aesthetic, historical and cultural values and any prescriptive rights for usage of the economic zone.

1.4.6 Identification and Assessment of Potential Direct and Indirect Impacts

A detailed analysis of the various project components shall be done in order to identify the potential environmental impacts, both negative and positive, of the project at all stages. The identified impacts must be profiled to assess the magnitude and importance of the impacts. The extent and quality of the available data shall be characterized, explaining significant information deficiencies and any uncertainties associated with the predictions of impacts. The impact must take in account the number and magnitude of mitigation strategies which need to be employed to reduce the risk(s) introduced to the environment. Where possible, impacts must be quantified. Each project activity or impact is to be assessed and ranked for both the magnitude and importance of the impact and presented in a weighted matrix for all the phases of the project (i.e., preconstruction, construction and occupation and operational).

1.5 Policy, Legal and Administrative Framework

Outline the pertinent legislation, regulations, policies and standards governing environmental quality, safety and health, protection of sensitive areas, protection of endangered species, siting

Terms of Reference (TORs)

and land use control at the national and local levels. The examination of the legislation should include the relevant international conventions, protocols and treaties where applicable

- All applicable legislation, regulations, policies and standards in relation to the construction and operation of the development should be highlighted, including but not be limited to the other development permits such as Planning and Building. (Punjab Environmental Protection Act 1997, (Amended 2012)
- Describe traditional land use and prescriptive rights including public access rights.
- Discuss issues relating to provisions for law enforcement and security as it relates to this development.

1.6 Public Participation and Consultation

The proponent should consult with relevant entities and the public throughout the EIA process. Document the public participation. Describe the public participation methods, timing, type of information provided and collected from the public and stakeholder target groups consultations. Instruments used to collect the information must be included in the appendix. The issues identified during the public participation process and discuss the public input that has been incorporated or addressed in the TOR and EIA.

2.0 Recommended Mitigation

Mitigation and abatement measures would be formulated for each potential negative impact identified. This will also include recommendations for the maximization and enhancement of beneficial impacts, energy conservation and the use of green building technology.

2.1 Identification and Analysis of Alternatives

Alternatives to the site location (on other cays or islands), project design, scale, conditions of operation and technology shall be analyzed including the “no-action” alternative. The examination of project alternatives should incorporate the use history of the overall area in which the site is located and previous uses of the site itself. These alternatives must be assessed based on the physical, ecological and socio-economic parameters of the proposed site. Justification for the selection of the chosen alternative(s) shall be included.

3.0 Environmental Management of the Project

Terms of Reference (TORs)

A draft environmental monitoring and management plan would be developed which will detail the monitoring requirements for pre and post construction and during the operational phases of the project. This will include recommendations to ensure the documented implementation of mitigation measures and long-term minimization of negative impacts and maximization of positive impacts.

3.1 At a minimum the draft monitoring plan should include:

- Introduction outlining the need for a monitoring program
- The activity being monitored and the parameters chosen to effectively carry out the exercise
- The methodology to be employed and the frequency of monitoring
- Frequency of reporting to EPA
- The sites being monitored. These should incorporate a control site where no impact from the development is expected
- Raw data to be collected and relevant Tables and graphs to be used

Deliverables

The No Objection Certificate from Environment Protection Department (EPD) Punjab is main deliverable. The other key deliverables, as per following:

1. Study of previous EIA's of project area and other relevant literature review
2. Collection of baseline secondary and primary data of site in terms of social, economic, environmental, flora, fauna and hydrological factors. Collection of any other relevant data considered important by consultant.
3. Development of baseline conditions at site including analysis of air, water, soil, solid waste and noise samples.
4. EIA report to be prepared exactly as per the guidelines of EPD Punjab whichever applicable at site. Report to be submitted within 45 days of contract award.
5. Required number of EIA copies to be submitted to EPA/EPD for approval

Terms of Reference (TORs)

Proponent

M/S LCI Limited-Animal Health Business

Consultant

Environmental Consultancies & Options
(ECO)

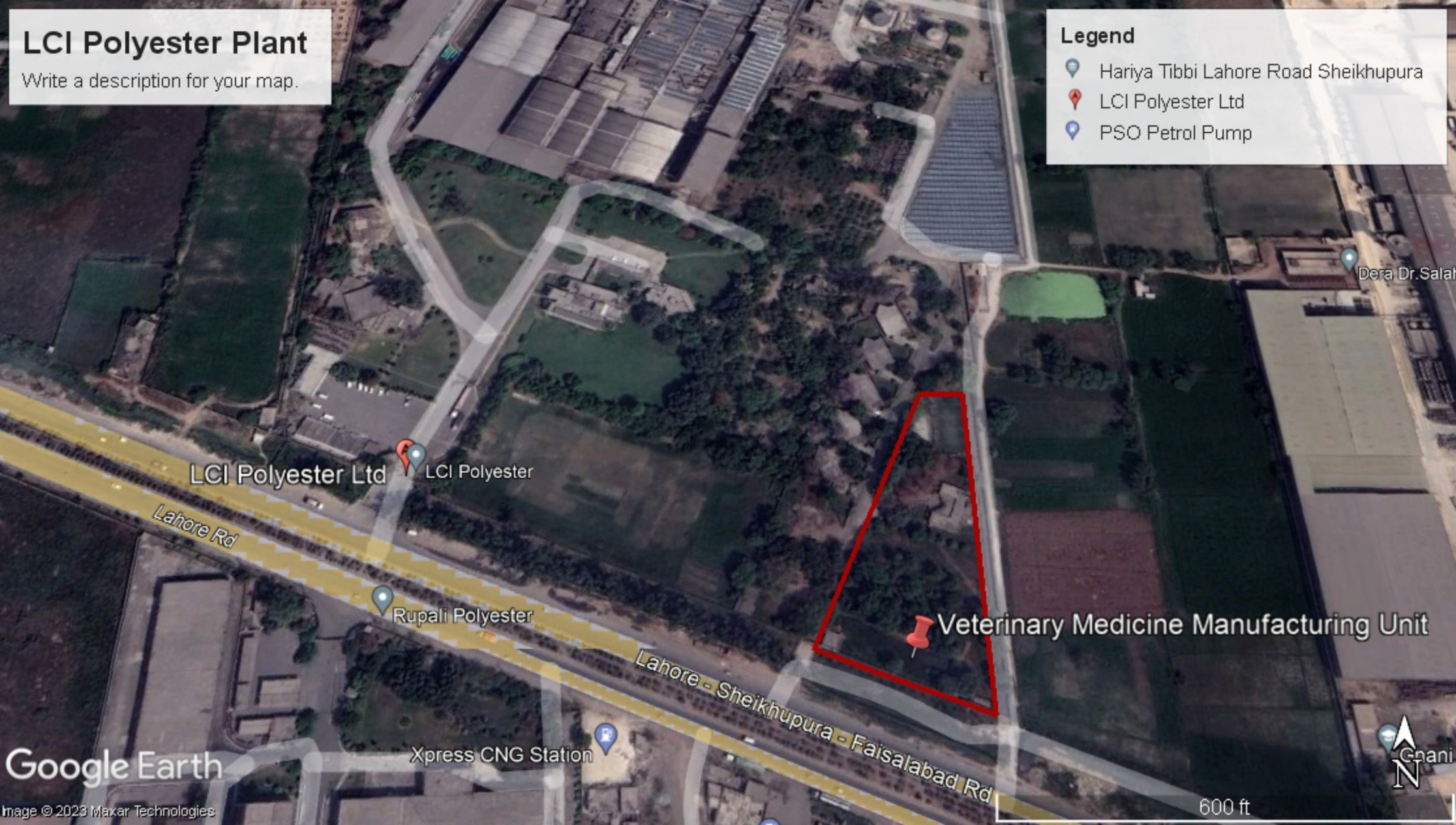
ANNEXURE-G

LCI Polyester Plant

Write a description for your map.

Legend

-  Hariya Tibbi Lahore Road Sheikhupura
-  LCI Polyester Ltd
-  PSO Petrol Pump



Dera Dr. Salah

LCI Polyester Ltd

LCI Polyester

Rupali Polyester

Veterinary Medicine Manufacturing Unit

Xpress CNG Station

Lahore - Sheikhupura - Faisalabad Rd

Google Earth

Image © 2023 Maxar Technologies

600 ft



ANNEXURE-H

PLOT AREA = 84827 S.ft.
15- KANALS 11- MARLAS
8- SARSAHI

82'-3"

16668 S.ft.
3- KANALS
1- MARLA
75 S.ft.

PLOT AREA = 36076 S.ft.
6- KANALS 12- MARLAS
172 S.ft.

467'-2"

284 S.ft.

PLOT AREA = 28541 S.ft.
5- KANALS 4- MARLAS
253 S.ft.

3257 S.ft.

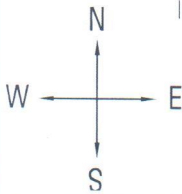
11- M 8- S
23 S.ft.

273'

LAHORE ROAD

STREET 22'-0" WIDE

516'-6"



PLAN FOR
SHAHID SHAH SB
AT LAHORE ROAD
SHEIKHUPURA

HAJVERY DESIGNER

ARCHITECT, ENGINEER, INTERIOR DESIGNER

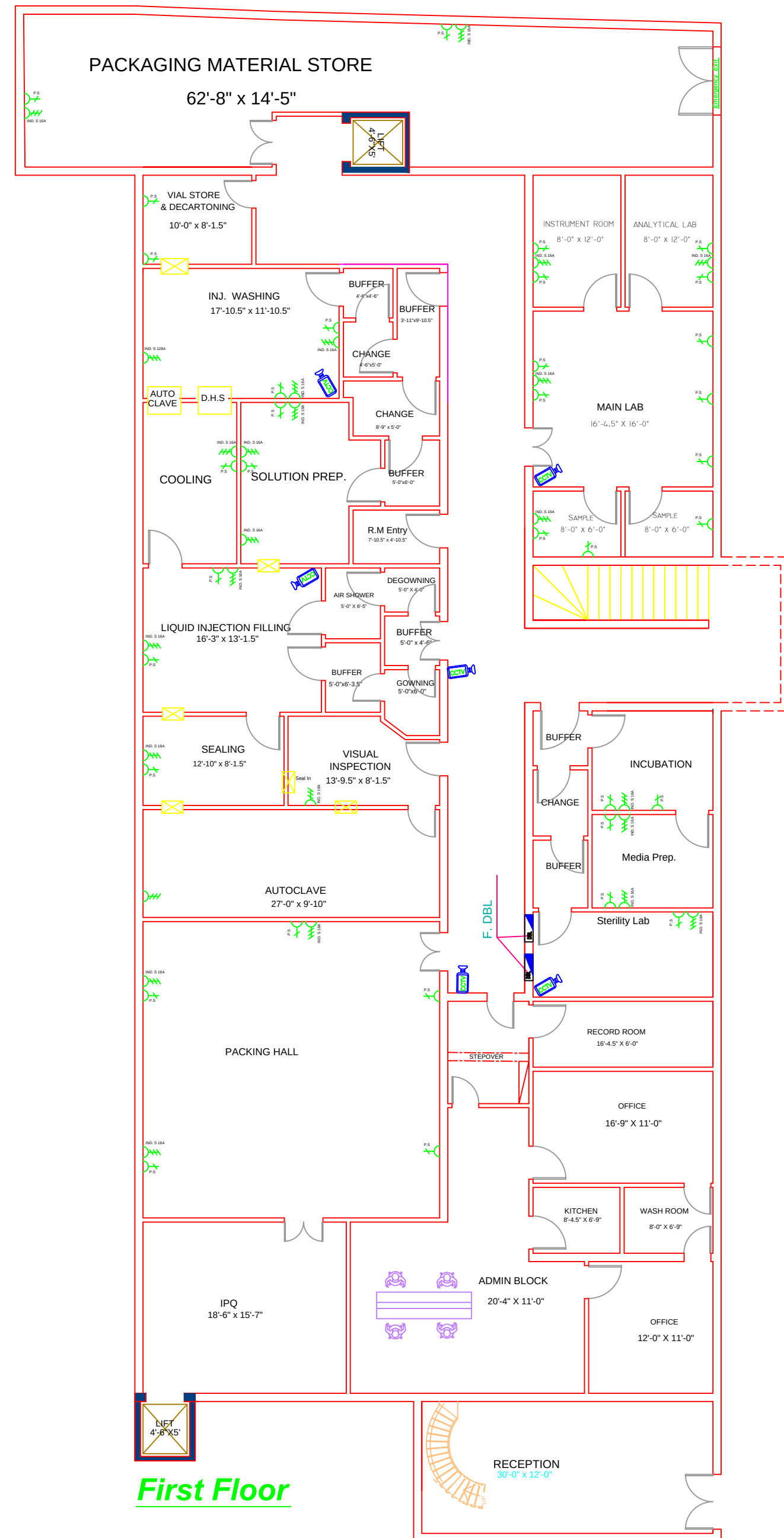
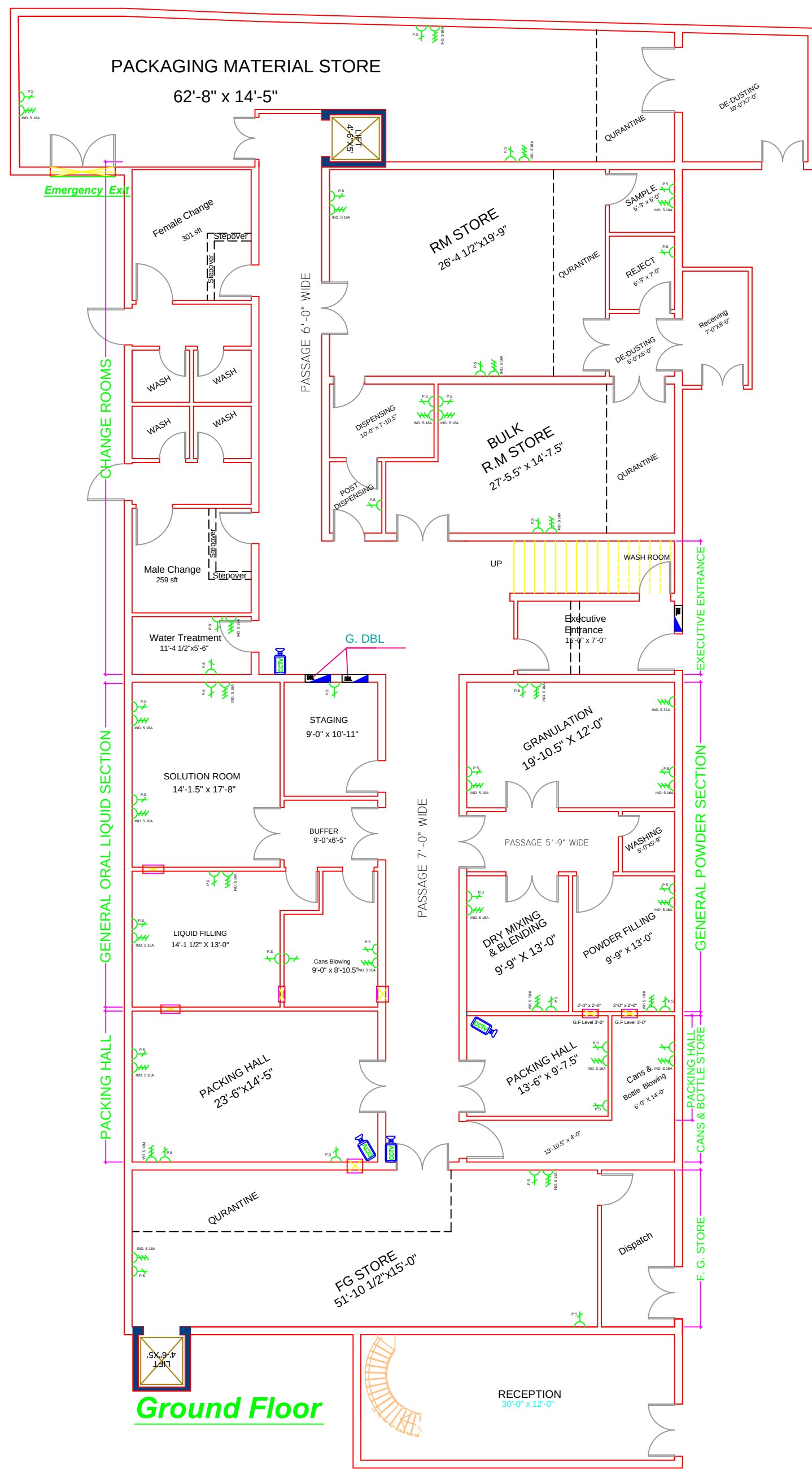
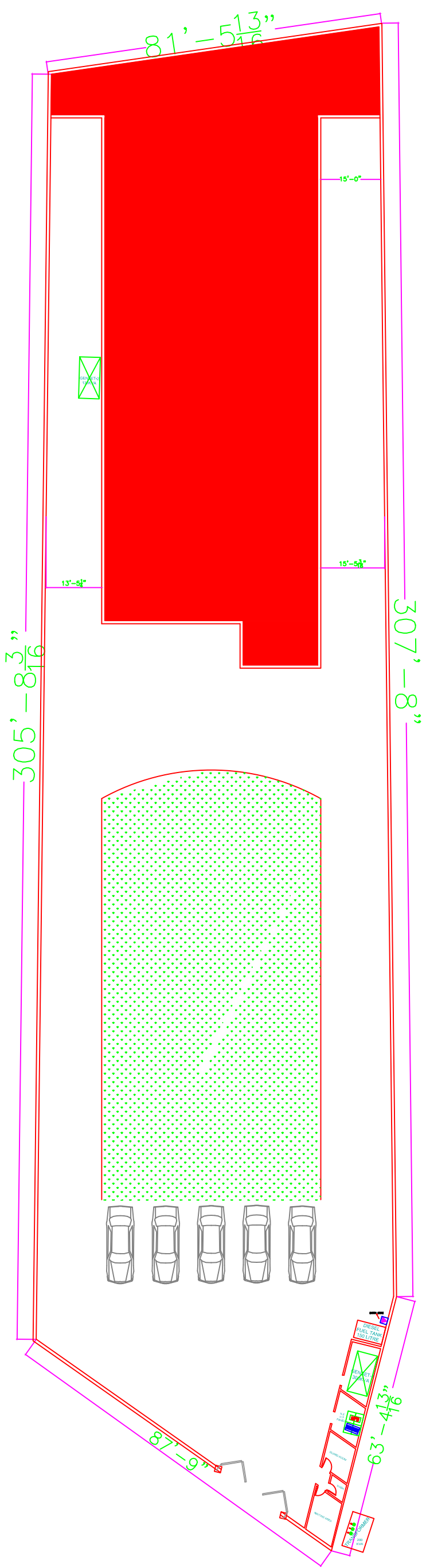
CONSULTANT & CONTRACTOR

Email : fahadlatif73@yahoo.com, fahadlatif73@gmail.com

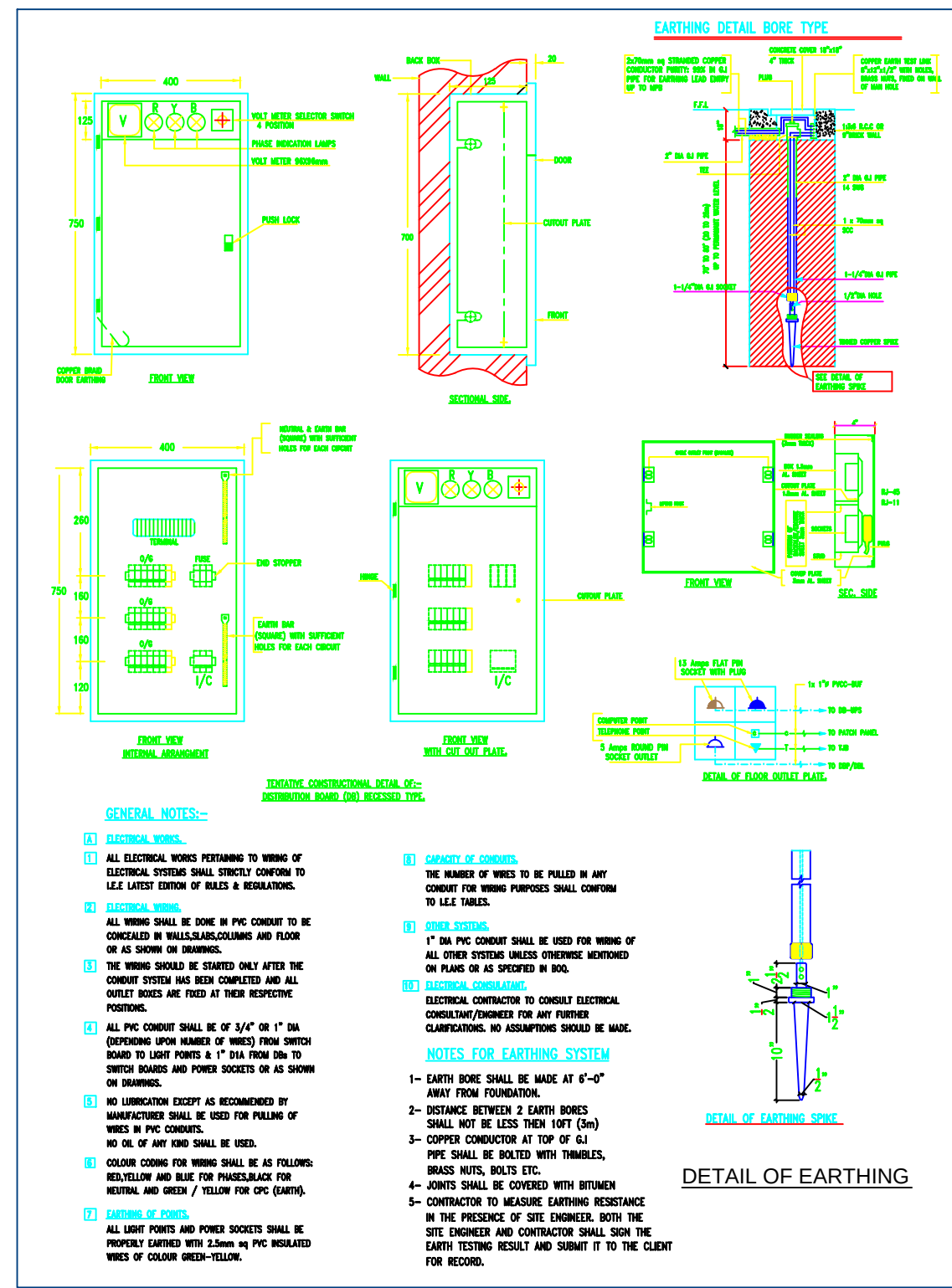
CELL # 0303-4082299, 0334-0462704

NEAR CHUNGI STOP FAISALABAD ROAD SHEIKHUPURA

Sand-blas



S.NO	SYMBOLS	DESCRIPTION	MAKE	MOUNTING HEIGHT
1		INDICATES MAIN PANEL BOARD	REFER TO SLD	4'-0" F.F.L
2		INDICATES SUB MAIN PANEL BOARD	REFER TO SLD	4'-0" F.F.L
3		DISTRIBUTION BOARD WITH MCBS FOR PROTECTION OF LIGHT AND SOCKETS CIRCUITS	REFER TO SLD	4'-0" F.F.L
4		PHASE INDICATION LAMPS ON MPB, SMPB & DBs	REFER TO SLD	SEE DRGS. SLD
5		MOULDED CASE CIRCUIT BREAKER - MCCB	REFER TO SLD	SEE DRGS. SLD
6		RESIDUAL CURRENT CIRCUIT BREAKER SENSITIVITY 300 mA	REFER TO SLD	SEE DRGS. SLD
7		INDICATES CLOSE CIRCUIT TV CAMERA	-SONY -PHILIPS	-ON WALL -7'-0" -ON SLAB
8		INDUSTRIAL SOCKET THREE PHASE	TOSHIBA SCHNEIDER	4'-0" F.F.L
9		POWER SOCKET SINGLE PHASE	TOSHIBA SCHNEIDER	4'-0" F.F.L
10		EARTH BORE HOLE UP TO PERMANENT WATER LEVEL FOR EARTHING	LOCAL	DEPTH 60" TO 80"



ICI Pakistan Limited,
Life Sciences
45 KM, OFF MULTAN ROAD LAHORE.

Electrical Drawing of Veterinary Section

DRAWN BY: AHMED ALI
CHECKED BY: M. AMIR

SCALE: N T S
DATE: 30-JAN-2021

ANNEXURE-I



SOLUTION ENVIRONMENTAL & ANALYTICAL LABORATORY



GROUND WATER ANALYSIS REPORT

Client Name: LCI Limited Animal Health Business
Site Location: 30-KM Lahore Sheikhpura Road District Sheikhpura
Sampling Point: Tubewell
Nature of Sample: Ground Water
Sampling Date: 07-08-2023
Date of Completion: 15-08-2023
Sampling By: SEAL
Reference No.: SEAL/Lab/2023/GW/001
Results: -

Sr. No.	Parameter	Method	Unit	Result	PEQS
1	pH	APHA 4500-H ⁺ B	--	7.27	6.5-8.5
2	Total Dissolved Solids (TDS)	APHA 2540 C	mg/l	325	1000
3	Chloride	4500- APHA Cl ⁻ B	mg/l	22	250
4	Fluoride	APHA 4500-F ⁻ D	mg/l	0.14	1.5
5	Turbidity	APHA 2130 B	NTU	BDL	5
6	Sodium	APHA 3500-K ⁺ B	mg/l	74	200
7	Potassium	APHA 3500-Na ⁺ B	mg/l	3.0	---

PEQS = Punjab Environmental Quality Standards

BDL (Below Detection Limit)

APHA = American Public Health Association

Note:

- This report should be reproduced as a whole and not in parts.
- The responsibility of the ethical use of the results reported in this report lies with the client.
- Consequently, the laboratory is absolved of its responsibility for any claim that may result through the use by the client or others of the results appearing in this report.
- The left-over samples (if so available) shall be retained for 10 days after the issuance of the report unless otherwise negotiated between the client and the laboratory.
- The report is not valid for any negotiation.

ANALYZED BY	REVIEWED BY	APPROVED BY
		
Lab Analyst	Assistant Lab Manager	Lab Manager





SOLUTION ENVIRONMENTAL & ANALYTICAL LABORATORY



WASTEWATER ANALYSIS REPORT

Client Name: LCI Limited Animal Health Business
Site Location: 30-KM Lahore Sheikhpura Road District Sheikhpura
Sampling Point: Treatment Plant
Nature of Sample: Wastewater
Receiving Date: 07-08-2023
Completion Date: 15-08-2023
Temp. & Humidity: 23-27 C° & 50-70 %
Sampling By: SEAL
Reference No.: SEAL/LAB/2023/WW/001
Results:-

Sr. No.	Parameters	Method	Parameter	Result	PEQS
1	pH	APHA 4500-H+ B	---	7.36	6-9
2	Chemical Oxygen Demand (COD)	APHA 5220 D	mg/l	26	150
3	Biochemical Oxygen Demand (BOD ₅)	APHA 5210 D	mg/l	12	80
4	Sulphide (S ²⁻)	APHA 4500-S ²⁻ F	mg/l	0.015	1.0
5	Total Suspended Solids (TSS)	APHA 2540 D	mg/l	20	200
6	Oil & Grease	APHA 5520 B	mg/l	BDL	10
7	Ammonia (NH ₃)	APHA 4500-NH ₃ C	mg/l	0.72	40

PEQS = Punjab Environmental Quality Standards

APHA = American Public Health Association

Note:

- Standard Method for the Examination of Water & Wastewater, 23rd Edition, 2017
- This report should be reproduced as a whole and not in parts.
- The responsibility of the ethical use of the results reported in this report lies with the client.
- Consequently, the laboratory is absolved of its responsibility for any claim that may result through the use by the client or others of the results appearing in this report.
- The left-over samples (if so available) shall be retained for 15 days after the issuance of the report unless otherwise negotiated between the client and the laboratory.
- The report is not valid for any negotiations.

ANALYZED BY	REVIEWED BY	APPROVED BY
		
Lab Analyst	Assistant Lab Manager	Lab Manager





SOLUTION ENVIRONMENTAL & ANALYTICAL LABORATORY



NOISE LEVEL MONITORING REPORT

Client Name: LCI Limited Animal Health Business
Monitoring Date: 07-08-2023
Reporting Date: 15-08-2023
Monitoring By: SEAL
Results: -

Site Location: 30-KM Lahore Sheikhpura Road
District Sheikhpura
Instrument Used: Digital Sound Level Meter T.M 102
Reference No: SEAL/LAB/2023/NM/001

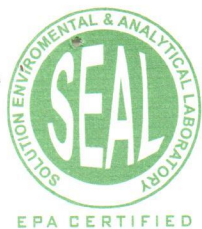
Sr. No.	Location	Min. dB(A)	Max. dB(A)	Average dB(A)
1.	North Boundary of Site	63.5	68.4	66.4
2.	South Boundary of Site	62.3	66.6	63.9
3.	East Boundary of Site	64.2	71.5	67.8
4.	West Boundary of Site	61.4	67.2	64.3
5.	Centre of Site	65.7	72.5	68.2
PEQS (Industrial Area Day Time) dB (A)				75

Note:

- The average noise levels describe the overall ambient noise levels of the proposed site.
- Selected measurement units were dB (A) otherwise stated.
- Quality was assured through self-calibration of the instrument.
- The measurements were carried out on client request.
- The client is responsible lawful usage of reported data in future.
- The report is not valid for any negotiations.

ANALYZED BY	REVIEWED BY	APPROVED BY
		
Lab Analyst	Assistant Lab Manager	Lab Manager





SOLUTION ENVIRONMENTAL & ANALYTICAL LABORATORY



AMBIENT AIR MONITORING REPORT

Client Name: LCI Limited Animal Health Business
Monitoring Point: Mid Point of Site
Starting Date: 07-08-2023
Monitoring By: Solution Environmental & Analytical Laboratory

Site Location: 30-KM Lahore Sheikhupura Road
District Sheikhupura
Reporting Date: 15-08-2023
Reference No.: SEAL/Lab/2023/AA/001

Sr. No.	Parameter	Method	Unit	Results	PEQS
1	Particulate Matter (PM ₁₀)	40 CFR Part 50, App J (US-EPA)	µg/m ³	5	150
2	Carbon monoxide (CO)	40 CFR Part 50, App. C (US-EPA)	mg/m ³	0.0	10
3	Oxides of Nitrogen NO _x (NO & NO ₂)	40 CFR Part 50, App F (US-EPA)	µg/m ³	62	120
4	Sulphur dioxide SO _x (SO ₂)	EQSA-0197-114 (US-EPA)	µg/m ³	1	120

PEQS: Punjab Environmental Quality Standards

Note:

- Quality was assured through self-calibration of the instrument.
- The measurements were carried out on client request.
- The client is responsible lawful usage of reported data in future.

ANALYZED BY	REVIEWED BY	APPROVED BY
		
Lab Analyst	Assistant Lab Manager	Lab Manager



ANNEXURE-J

GOVERNMENT OFFICIALS/NGO PERSONS FEEDBACK FORM

NAME	DESIGNATION	FEEDBACK	SIGN	CONTACT #
Engr. Adnan Adam	Project Director Quaid-e-Azam Business Park	Quaid-e-Azam Business Park will provide hundreds of thousands of job in the Province as several national & multinational groups are establishing their units here. This project will ultimately boost-up economy and increase GDP of the country.		03200840651
Hamid Ali Field Assistant Environment Department Sheikhpura	Field Assistant EPA Sheikhpura.	It is suggested to consider all guidelines of EPA, Punjab, during preparation of Environmental Impact Assessment, also develop & implement detailed EIMP.		0301-922234p
FARWA RASOOL Assistant Director Fisheries Sheikhpura		Being a fisheries technical public officer, it is suggested to kindly filter & decompose the waste material of industrial unit properly so that it does not		

GOVERNMENT OFFICIALS/NGO PERSONS FEEDBACK FORM

NAME	DESIGNATION	FEEDBACK	SIGN	CONTACT #
Fauzia	A.D - fisheries	pollute the water resources ultimately These precautions must be taken to save life in water.	<i>[Signature]</i>	0304- 2858979
Ch- Waqar Ahmad	Civil Defence Officer	~~It~~ The Project will bring economic prosperity in the area. It is recommended that the owner should plant more tree of native species in the proposed project vicinity.		0300- 4195434
Najam-ul-Hussain Vish	Rachna Drg: Divin SKP (Head Draftsman)	The proponent should comply with environmental regulations, also encourage to install WSP to avoid water pollution.	<i>[Signature]</i>	0321-4038294

ANNEXURE-K

SOCIAL CONSULTATION FORM

Name	Age	Occupation	Address	Education	Feedback	Signature	Contact
Abdul Gheffar	38	مزدوری	Rajenpur	-	سیرنگا، ملے کا۔	-	-
M. Javed	30	مزدوری	-	Primary	بیت اجماع منصوبہ ہے	چاچا	0341-4194816
Abdul Qayyum	24	مزدوری	D.G Khan.	Middle	اس طرح کے منصوبے درج ذیل ماس	عبدالغنی	0322-9760581
Fiaz Ahmad	36	مزدوری	Rajenpur	-	مقامی لوگوں کو فائدہ پہنچے۔	-	0342-6025979
Asmat	18	مزدوری	D.G Khan	Middle	اس طرح کے منصوبے ملے سے سیرنگا میں اجناس نہ ہوں۔	عبدالغنی	0343-4424914
M. Nadeem	18	مزدوری	Rajenpur	Middle	علاقہ میں رہنے والوں کی زندگی کو بہتر بنانے کے لیے	محمد نذیر	03-
M. Shreef	22	مزدوری	Rajenpur	-	سیرنگا کے نئے حوالے میں	-	-
M. Jaffer	30	مزدوری	D.G Khan	-	مقامی لوگوں کو سیرنگا، ملے کا۔	حسبہ جعفر	0309-0357535

SOCIAL CONSULTATION FORM

Name	Age	Occupation	Address	Education	Feedback	Signature	Contact
Abdul Samad	45	مستری	Ahmedpur dist	Primary	اس منصوبہ کے متعلق لوگوں کو کافی حد تک شامل	عبدالحمید	0308-8294596
Seediq	30	چوکیدار	سولی مہیاں	-	لوگوں کا کہنے کے حوالے سے	-	0304-8856910
Ali Raza Hussain	50	مستری	Bhakker	-	حلقہ کی طرف سے 2 بے اجاعا منصوبہ	ایکطرف	0302-4259785
M. Arif	18	Labour	Rajampur	-	اجاعا منصوبہ کے ضرور ملنا چاہیے	-	03-
Allah Bachaya	39	مستری	District Muzafargarh	Primary	مقامی لوگوں کو روزگار ملے گا	! اللہ بچا	0302-4702687
Qulom Qadir	34	مزدوری	Nehari	metric	اجاعا منصوبہ کے لئے اس میں اضافہ کرنا	Q. Qadir	0303-0047437
M. Seeraj	25	مزدوری	Rajampur	-	حلقہ میں خوشحالی آئے گی	-	-
M. Asma	36	مزدوری	-	-	اس طرح کے منصوبہ کے لئے کامیاب	-	-

SOCIAL CONSULTATION FORM

Name	Age	Occupation	Address	Education	Feedback	Signature	Contact
Anjum Mabeen	27	Contractor	Village Bhamb	Primary	علاقے میں ترقی آگئی		0387- 7441079
Ali Bahadur	26	Planning Engineer	District Pakpattan	Masters	حقانی لوگوں کو رتبہ ملے گا۔		0336- 4463377
Riaz	25	Shopkeeper	سوئی طیان	-	اس طرح ملے گا، درجہ ملے گا ہے	Riaz	0386- 4355207
M. Saqib	50	Farmer	Chungi, Armar Seethu LHR.	Middle	بہت اچھا مفید رہا ہے		0380- 4469124
M. Ashraf	45	Shething	Mianwali	Matric	بہت مفید رہا، حوالہ دے گا، نقصان نہیجائے فقیر ملنا چاہیے	محمد اشرف خان	0384- 9929211
Allah Rokha	60	Foreman	Thoker, LHR.	Primary	روزگار کے مواقع بہت آسوں گے۔	اللہ رکھ	0309- 4070772
M. Javed	25	Laborer	Rajonpur	-	علاقے میں فوری کام آئے گی		-
Zulafqar Ali	48	مستری	District Bhakkar	Middle	علاقے میں حقانی لوگوں کو رتبہ ملے گا ہے	ذوالفقار علی	0343- 5383513