EIA-2025

ENVIRONMENTAL IMPACT ASSESSMENT REPORT

Extension of Pharmaceutical Products Manufacturing Unit, Construction of Admin Block & Installation of Biomass Boiler by M/S Pharmagen Limited.

LOCATED AT

34-Km Nabi Bakhush Wala, Ferozepur Road, District Lahore

PROJECT PROPONENT: MR. JAWAD UR REHMAN BAJWA

SUBMITTED TO

ENVIRONMENT PROTECTION AGENCY, PUNJAB

LIST OF ABBREVIATIONS

CO_2	Carbon dioxide
dB(A)	A weighted decibel scale
EIA	Environmental Impact Assessment
EMMP	Environmental Management and Monitoring Plan
EMP	Environmental Management Plan
EPA	Environmental Protection Agency
EPD	Environmental Protection Department
EPO	Environmental Protection Ordinance
IEE	Initial Environmental Examination
Ltd.	Limited
LTI	Loss Time Injury
LWI	Loss Work Injury
m^3	Cubic meter
m^3/h	Cubic meter per hour
MW	Megawatt
M/S	Messrs
NEQS	National Environmental Quality Standards
No.	Number
NOC	No Objection Certificate
NO_x	Oxides of Nitrogen
PEPC	Pakistan Environmental Protection Council

PEPA, 1997	Pakistan Environmental Protection Act, 1997
PEPA, 2012	Punjab Environmental Protection (Amendment) Act, 2012
PEPO	Pakistan Environmental Protection Ordinance
PKR	Pakistani Rupees
PM	Particulate Matter
PPEs	Personal Protective Equipment
Pvt.	Private
SMART	Self-Monitoring and Reporting
SOPs	Standard Operating Procedures
SO_x	Oxides of Sulfur
WAPDA	Water and Power Development Authority

EXECUTIVE SUMMARY

INTRODUCTION

Under the dynamic leadership of the Group and strong Human Resource, Pharmagen Limited was founded in 1990. From the day of inception, Pharmagen Limited has been constantly striving to achieve excellence and generate highest value for all of its stakeholders.

Said project is the Extension of Pharmaceutical Products Manufacturing Unit, Construction of Admin Block & Installation of Biomass Boiler by M/S Pharmagen Limited. To full fil the compliance of section 12 of PEPA, Act 1997 (amended 2012 & 2017) Environmental Consultants has been engaged for conducting Environmental Impact Assessment (EIA) of said pharmaceutical Industry. The company has obtained renewal of operational phase environmental approval for existing facility vide letter No: DD(EIA)/EPA/F-18(EIA)/2010/525 dated 24-05-2024.

The main objectives of this EIA are to establish baseline environmental conditions, identify potential impacts and suggest suitable mitigation measures for the execution of the said project. This study has been accomplished in line with the provisions – guidelines and directives of Punjab Environmental Protection Agency.

This executive summary presents an overview of the main findings of the EIA Report for the aforesaid project i-e Pharmagen Limited Extension of Pharmaceutical Products Manufacturing Unit, Construction of Admin Block & Installation of Biomass Boiler.

PROJECT OUTLINE (Details are given in Chapter 2)

Salient features of project:

Proponent Name:	**Mr. Jawad Ur Rehman Bajwa (Factory Manager)** Authority Letter has been attached.
Project Owner	Pervez Hussain Sufi (CEO)
Project Title:	Extension of Pharmaceutical Products Manufacturing Unit, Construction of Admin Block & Installation of Biomass Boiler by M/S Pharmagen Limited.
Project Location:	34-Km Nabi Bakhush Wala, Ferozepur Road, District Lahore
Total Area	25.14 Acres 201.14 Kanals
Source of Water	Groundwater
Cost of Project	PKR 80 million approx.
Nearest Industry	H. Nizam Din & Sons (Adjacent) PEL (Pak Elektron Limited Unit II (0.6 Km) H. Nizam Din & Sons (Pvt) Ltd Unit II (0.7 Km)
Source of Power:	In house power generation
Wastewater:	Wastewater from the process will be treated through waste water treatment plant
Solid Waste Management:	To handle the waste, waste management contract with EPA certified body (AT Waste Management company) has been done.
Tree Plantation	At designated areas
Finished Products	Active Pharmaceutical Ingredients (API's) Penicillin Cephlasporin
Capacities	
Product Capacity	200 TPA
Boiler Capacity	6 TPH
ETP	100 m^3/ day
Fuel of Boiler	Biomass

MAJOR IMPACTS AND RECOMMENDED MITIGATION MEASURES:

Beneficial/Positive Impacts:

- The establishment of the said project will contribute to enhancing Pakistan's domestic productivity, and help diversify Pakistan's economy
- Provision of employment and stimulation of local economy.
- Provision of high-quality pharmaceutical products
- Potential of improvement for social and cultural values of local people's exchange of values and standards through positive social interactions. Positive changes in lifestyles will occur due to availability of income when the natives take up Company jobs.

Negative Impacts:

Impacts	Mitigation measures
Construction phase	
Dust emissions	Most of the dust generating activities during construction will last for a brief period, when excavation works will be executed. Thereafter, vehicular movement will generate most of the dusts. Dusts will be suppressed using water bowser to spray exposed land surfaces and particularly areas likely to be disturbed by trucks and other vehicles during the construction of the factory premises. Vehicular speed limits of 20 km/h will be ensured in order to minimize dust generation. Further mitigation measures will be: • Covering haulage vehicles transporting aggregate, soil and cement • Covering onsite stockpiles of aggregate, cement, soil, etc. • Providing workers with the necessary Personal Protective Equipment (PPE) e.g. dust masks and ensure that they are worn • Operating well maintained vehicles and equipment
Wastewater	Portable toilets with septic tanks will be provided to workers during construction phase
Impacts of accidental spillages	• The integrity of storage facilities will be ensured • Drip pans will be made available where necessary
Safety	• Safety signage will be put in relevant places within the construction site

	• Reckless driving by construction workers will be prohibited and monitored. • Workers will be given PPEs such as; helmets, mask, ear-plugs/muffs, safety boots, safety goggles, safety jackets, harnesses etc. and its use was strictly enforced • Workers will be trained on regular basis regarding personal safety • Incidents will be reported directly to the concerned authority
Solid waste management	• Recycling or reuse of waste wherever possible. • Application of a good strategy to collect, remove and safely dispose of waste on daily basis to ensure a clean environment in the factory site • Integrated waste management system will be adopted for the proper management of the waste at site • At the end of the construction phase, left-over waste will be removed as per practices of area • All the idle machinery and equipment will be immediately removed from the site • Scrap and the debris will be removed from the site at the end of the construction stage after appropriate segregation of the material
Operation Phase	
Air Emissions, Particulate emissions and stack emissions	• Emissions from boiler are controlled by equipping with cyclone, scrubber and room • Power Engines will be equipped with air emission control technology. • Monitoring of Ambient air parameters (Particulate matter, SOx, NOx) emissions should be carried out on regular basis to ensure compliance with the PEQS. • The inspection and the maintenance of the boiler and generator will be done on regular basis.

	• Plantation of indigenous trees within the premises and along the boundary. • HVAC System will be installed in the process hall to keep the air clean.
Noise Emissions	• Effective noise suppression design and plan will be made for all noise producing equipment i.e. high noise generating machines will be kept in isolation from other machines to minimize the overall cumulative noise. • Noise barriers should be implanted • Noise area will not be open site. The source of noise will be in closed and covered place. Where the OSH standard will be applied. • The repairing and the small source of noise will be removed if it will possible. • PPEs are provided to workers • Proper tree plantation has been done • Noise monitoring will be carried out periodically.
Degradation of surface waters quality due to process water and sewage direct disposal	• For treatment of wastewater, effluent treatment plant will be installed which is the part of the extension. • The capacity of treatment plant will be 100 m^3/ day. • The technology of wastewater will be activated sludge process. • Wastewater will be disposed off in Kot Mela Ram Drain, the management has obtained approval. • The operational maintenance of ETP will be monitored on daily basis.

	• EPA certified laboratory will be engaged for analysis of wastewater from outlet against PEQS.
To minimize loss work injury/hazards/incidents/accidents	• Proper training will be provided for the proper usage of machineries and personal protective equipment (PPE) will be provided. It will be ensured that the individual who has received the correct training is operating a particular machine. • Site supervisor or health and safety should be present on site • Risk Assessment will be done on daily basis • Emergency response plans will be remained active. • Monitoring cameras and sensors will be implanted at the work site • OSHA polices will be implemented on site • Regulation of the health and safety polices will be done on regular basis • Regular housekeeping practices will be ensured by keeping the floor dry and during washing; proper protective equipment are being used. Restricted entry should be ensured during washing. • Training of staff in the handling of lifting materials. • Timely maintenance and repair of electrical equipment will be conducted. • Implementation of work rotations, provision of regular work breaks. • At workplace, first aid facilities will be maintained at readily accessible places.
To minimize disturbance of communities due to noise	• All the machinery will be installed and operated in a closed hall and from operation of machinery noise will not be a problem for the residents in the area nearby. Further Administration of the unit will

	take the precautionary measures to avoid the noise emissions. There is no possibility of Noise pollution • A thick greenbelt will be developed all around the plant which will be acting as noise barrier. • All the workers will be provided with ear plugs. • All the transporters will be advised to carry out regular maintenance of their vehicles.
Solid waste management	• There will be separated bins for segregation of different type of waste • Proper waste collection system will be ensured. For this purpose, waste bins are placed inside the boundary. • The recyclable waste will be sent to waste contractors. • The sludge of from the ETP plant will salad out to waste companies. • The site in charge will ensure the separation of waste at production line. • Proper person will be haired for the collection and removal of waste from the site. • Records of generated waste should be maintained. • All non-hazardous waste that can be recycled or reused will be handed over to the contractors. • All hazardous waste from process will be sold to EPA certified contractor. • Training will be provided to personnel for identification, segregation and management of waste. • All containers of waste will be labeled properly. • All the container should be caped clean, making sure no Oster will produce in it.

	• The proper waste management system will be applied. • Small bins and large containers will be provided on every waste producing site at defined place causing no risk to worker and machinery. • In-house audits of the waste management will be undertaken on regular basis.
Traffic	• Nighttime driving of project vehicles will be limited where possible. • Vehicles will remain confined to defined access. • The route of the vehicles will be defined and given to drivers and security system. • The road will be labeled according to the rules and regulations. • Speed limits will be maintained. • The timetable and schedule of the vehicles will be defined and the monitoring of vehicles will be done every time. • Road signage relevant to the project traffic will be placed, where necessary. • Community complaint register and other means will be adopted for the community to complain about non-adherence of traffic to speed limits, safe driving and other safety related concerns. • All vehicle drivers will be trained in community safety aspects. Drivers will be trained in responsible and safe driving practices; safe speed limits for vehicles will be followed.

ENVIRONMENTAL MANAGEMENT & MONITORING PLANS:

During construction, ambient air quality for dust level in particular noise level (tests), solid waste management and soil contamination, and community and workers' safety (visual) need to be monitored. During operation, stack emissions, noise level, air quality,

wastewater quality and workers' safety will be monitored. Plan has been included in **Chapter-7** of this EIA Report.

CONCLUSION & RECOMMENDATION

It can be concluded that all the major and minor adverse environmental impacts from the construction/ Extension of Pharmaceutical Products Manufacturing Unit, Construction of Admin Block & Installation of Biomass Boiler by M/S Pharmagen Limited has been mitigated in environmental friendly manner and the Environmental Impact Assessment is being done in the light of guidelines recommended by Punjab EPA. Hence Environmental Approval may be accorded to the subject pharma industry for construction phase.

Recommendations:

Following Recommendations are suggested:

- Wastewater produced from process should be treated through Effluent Treatment Plant
- All the workers should be given with proper PPE's during operation phase
- All the concerns of stakeholders should be catered before construction
- EMP should be properly implemented
- The construction and installation should be completed in guidelines of accorded Environmental Approval.

LIST OF ANNEXURE

Following Documents are attached as annexure.

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INTRODUCTION

CHAPTER 1: INTRODUCTION

1.1 GENERAL

Under the dynamic leadership of the Group and strong Human Resource, Pharmagen Limited was founded in 1990. From the day of inception, Pharmagen Limitedhas been constantly striving to achieve excellence and generate highest value for all of its stakeholders. Their state of the art manufacturing facility is certified GMP and other ISO compliant. Pharmagen Limited is licensed by the Federal Ministry of Health to manufacture pharmaceutical drugs by the way of formulation. Pharmagen Limited follow strict professional working standards as outlined by IS0:9001-2008 and other International Standards of the same class. The company has also obtained accreditation for ISO 14001:2015, ISO 45001:2018 and ISO 17025. The company has obtained renewal of operational phase environmental approval for existing facility vide letter No: DD(EIA)/EPA/F-18(EIA)/2010/525 dated 24-05-2024.

Said project is the Extension of Pharmaceutical Products Manufacturing Unit, Construction of Admin Block & Installation of Biomass Boiler by M/S Pharmagen Limited. As per PEPA 2012 and the IEE/EIA Regulations, 2022 it is mandatory for the proponent of any development project to obtain Environmental Approval from EPA Punjab by filing an IEE or EIA as the case may be, before the Agency. This Report presents the Environmental Impact Assessment (EIA) for aforesaid unit. For this purpose, the proponent has engaged environmental consultants**.** The purpose of this study is to identify the environmental baseline i.e. physical, biological and socio-economic/cultural conditions and assess all possible impacts arising during the construction and operation phase of the project with the aim to find out appropriate measures for their mitigation, to either eliminate those impacts or to bring them to acceptable level and formulate Environmental Management Plan (EMP) for implementation of the project in environment-friendly manner.

The report provides relevant information, as required under the officially approved format, to facilitate the decision makers i.e. EPA Punjab for the issuance of Environmental Approval.

1.2 THE PROPONENT

Name	Mr. Jawad Ur Rehman Bajwa
Designation	Factory Manager
Address	34-Km Nabi Bakhush Wala, Ferozepur Road, District Lahore
Contact Number	0314-4999563

1.3 THE PROJECT

1.3.1 Nature of Project

The said project is the Extension of Pharmaceutical Products Manufacturing Unit, Construction of Admin Block & Installation of Biomass Boiler by M/S Pharmagen Limited. Its salient features have been described later in this Chapter, Chapter 3 and briefly in Executive Summary of this EIA Report.

1.3.2 Size of Project

The enhanced capacity as a result of addition of new construction will be 200 TPA and the capacity of biomass fired boiler will be 6TPH. Also, admin block,, warehouses for storage of raw material, final product will also be constructed.

1.3.3 Location of Project

Said Project is located at 34-Km Nabi Bakhush Wala, Ferozepur Road, District Lahore.

1.3.4 Total area

Total area required for said project is approx. 25.14 Acre (201.14 Kanals)

1.3.5 Cost of the Project

Cost of project has been estimated at Approx. PKR 80 million.

1.4 PURPOSE OF REPORT

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

Section 12 of Pakistan Environmental Protection Act, 1997 (PEPA, 1997) states ***"No proponent of a project shall commence construction or operation unless he has filed with the Provincial Agency an Initial Environmental Examination (IEE) and, where the project is likely to cause an adverse environmental effect, an Environmental Impact Assessment (EIA), and has obtained approval from the Provincial Agency in respect thereof."*** Later on, Punjab Environmental Protection Agency (Review of IEE and EIA) Regulations, 2022 provided the guidelines for categorizing the Projects. The main objectives of this EIA study were:

- To determine and document the state of the environment of the project area to establish a baseline in order to assess the suitability of the said project in that area.
- To identify pre-construction, construction and operation activities and to assess their impacts on environment.
- Provide assistance to the proponent for planning, designing and implementing the project in a way that would strengthen environment, improve ecological resilience, eliminate or minimize the negative impact on the biophysical and socio-economic environment and maximizing the benefits to all parties in cost effective manner.

- To present Mitigation and Monitoring Plan to smoothly implement the suggested mitigation measures and supervise their efficiency and effectiveness.
- To provide opportunity to the public for understanding the project and its impacts on the community and their environment in the context of sustainable development.
- Prepare an EIA Report for submittal to the Environmental Protection Agency, Punjab for according Environmental Approval.

1.5 Structure of Report

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

- Description of the Project
- Alternatives
- Scoping & Screening
- Description of Environmental and Social Conditions
- Assessment of Environmental Impacts and Mitigation Measures
- Mitigation Measures for Identified Impacts
- Public Consultation
- Environmental Management and Monitoring Plan (EMMP)
- Recommendations and Conclusions

CHAPTER 2

SCREENING & SCOPING

CHAPTER 2

SCREENING AND SCOPING

2.1 General

This section of the study concentrates on details of the project and its salient features; such as location, site layout, objectives, selection of alternatives, cost and magnitude of operation and various phases. Inputs and discharges relevant to different phases of the project, such as electricity & materials, etc. have also been examined as a response to possible environmental concerns.

2.2 Type and Category of Project

As per Review of Initial Environmental Examination (IEE) and Environmental Impact Assessment (EIA) Regulations, 2000 the Project of Establishment of Project fall in "**B (2)" Category of Schedule II i-e Chemical Manufacturing Units including Pharmaceuticals and cosmetics.**

2.3 Objectives of Project

Following are the main objectives of said pharmaceutical unit:

1. To produce quality products
2. To provide employment to the people
3. To change the social life style of the area
4. To upgrade the socio-economic condition of the area
5. Minimization of environmental impacts by adopting best management practices.
6. To support the local economy through significant investment and upgrades to infrastructure.

2.4 Alternatives

The analysis of the alternatives is a part of the EIA process to select the best among all possible project options. The alternatives of a project are defined as the options

that can help to meet the objectives of a project by different means including alternative project sites, Environmental alternative etc. The key criteria when identifying alternatives is that they should be feasible and reasonable.

Selection of preferred alternative is based on scores of factors including cost, schedule of delivery, environmental and social impact and the cost for their redressal. The drivers that affect potential alternative options and scenarios include: availability of project sites, current technologies; design changes that need to be introduced, operational situation, capital & recurrent costs, environmental & social issues, their potential impacts, and costs of mitigation.

The details of the site alternatives and project alternatives are discussed below

2.4.1 **Site Alternatives**

No other site alternative was available to be considered as feasible option for the installation of the plant as proposed project site is owned by the M/S Pharmagen Limited(Pvt.) Limited and the project is the extension of already existing unit. The proposed site was selected because of the following reasons;

- The selected site is located in the proximity of other relevant industries
- The site is well connected to the other parts of the country through National Highway.
- No human settlements displacement or relocation is associated with the project development and operation
- Operation of the aforesaid unit in the respective zone will provide job opportunities to local people and will improve their socio-economic status of the study area.
- The expansion shall produce high quality pharmaceutical products to meet the demand of community.

No important religious, archaeological, recreational site or ecologically/declared protected area and human settlement exists within close proximity of the selected site. In view of these facts, it can be concluded that the selected site is best suited for

the project, and will not pose any adverse impact or threat on any component of the environment.

2.4.2 Project Alternative

2.4.2.1 Labor

Cheap labor has always been the backbone of the economy of Pakistan. Cheap and ample supply of labor strengthens the industrial and agriculture sector of the country. There are approximately 7 upstream and 6,000 downstream production units in the country which provide employment directly and indirectly to ~ 600,000 people. Of the downstream units, only 700 belong to the organized sector while the remaining 5,300 units operate in the unorganized sector. Also, this project will emphasize to hire local labors as many as possible increasing the occupational status of the area.

Considering the above-mentioned factors, no project alternative can be envisaged.

2.4.3 Environmental alternatives

2.4.3.1 Wastewater Treatment

Wastewater, or sewage, originates from human and home wastewaters, industrial wastes, animal wastes, rain runoff, and groundwater infiltration. Generally, wastewater is the flow of used water from a neighborhood. The wastewater consists of 99.9% water by weight, where the remaining 0.1% is suspended or dissolved material. This solid material is a mixture of excrements, detergents, food leftovers, grease, oils, salts, plastics, heavy metals, sands, and grits. Types of wastewaters include: municipal wastewater, industrial wastewaters, mixtures of industrial/domestic wastewaters, and agricultural wastewaters. Typical agricultural industries include: dairy processing industries, meat processing factories, juice and beverage industries, slaughterhouses, vegetable processing facilities, rendering plants, and drainage water of irrigation systems.

Subsequent to primary treatment of wastewater, large amounts of dissolved and colloidal material must be removed. Secondary treatment, i.e., biological treatment, can transform dissolved materials into larger particles. Chemical treatment, or tertiary

treatment, using chemical materials will react with a portion of the undesired chemicals and heavy metals. Biological treatment tends to be a biological process with chemical treatment implemented for the removal of toxic compounds. The cost of chemical additives and the environmental problem of disposing of chemical sludge make this treatment process deficient, so the biological treatment must be implemented. In fact, the microorganisms utilize the dissolved organic matter as food for themselves.

Different technologies are being used to treat industrial wastewater like activated sludge process, Aeration lagoons, chlorination, ozonation, wetlands. Aeration lagoons are profound (3–4 m) compared to oxidation ponds. The aerators keep the microbial biomass suspended and provide sufficient dissolved oxygen. The hydraulic retention time (HRT) ranges from 3 to 8 days based on a treatment level, strength, and temperature. Lagoon systems require more land than other treatment methods. They are less efficient in cold climates and may require additional land or longer detention times in these areas. Odor can become a nuisance during algal blooms or with anaerobic lagoons and lagoons that are inadequately maintained.

Constructed wetlands are used for wastewater treatment or for greywater treatment. They can be used after a septic tank for primary treatment (or other types of systems) in order to separate the solids from the liquid effluent. Some constructed wetland designs however do not use upfront primary treatment. Disadvantages of constructed wetlands include high land area requirements (depending on the design, they may require a relatively large land area compared to a conventional facility), the need for a preliminary treatment before the wastewaters treated by the system (normally they do not used to treat raw wastewaters).

The system of ETP plant which is going to be installed in the said unit will treat wastewater to PEQS. This is the approach which helps the investor to even reuse the water for horticulture activities.

2.4.4 **Economic Alternative**

It is cleared that if such huge investment is being done, it will impact the resources as well. If it is considered that as per the capacity of the unit, the electricity is being supplied from WAPDA, it will impact the national supply. To deal with this issue Pharmagen Limited has planned to generate and use in-house power generation through solar. As well as energy efficient machineries will be installed.

CHAPTER 3
DESCRIPTION OF PROJECT

CHAPTER 3: DESCRIPTION OF PROJECT

This section of the study concentrates on details of the project and its salient features; such as its location, objective, site layout, cost and magnitude of operation at various phases and process employed for the subject process.

3.1 Objectives of Project

The main objective of this project is the Extension of pharmaceutical products manufacturing unit by M/S Pharmagen Limited(Pvt.) for supplying pharmaceuticals as per consumer demand.

3.2 Particulars of Project Site

Details of location of project are provided in table below:

Table 1: Particulars of Project Site

Particulars	Details
Latitude	31°17'32.02"N
Longitude	74°23'59.68"E
Location Address	34-Km Nabi Bakhush Wala, Ferozepur Road, District Lahore
District	Lahore
Nature of area	Industrial
Road connectivity	Ferozepur Road

3.3 Location and Layout of Project

3.3.1 Location of the Project

Project site is located at 34-Km Nabi Bakhush Wala, Ferozepur Road, District Lahore. Google map is given below:

Figure 3.1 Location Map of Project Site

3.4 **Nature of Area**

Said area is industrial in nature.

3.5 **Land Ownership**

The land is owned by Pharmagen Limited. Property documents have been attached as **Annexure II.**

3.6 **Government Approvals**

Management has applied for the approvals from different concerned departments. Once the NOCs will obtain from different department, will be provided to EPA. The company has obtained renewal of operational phase environmental approval for existing facility vide letter No: DD(EIA)/EPA/F-18(EIA)/2010/525 dated 24-05-2024.

3.7 **Land Use on Site**

The land use on the site will be industrial in nature. There is no settlement, grassland or

preserved area in the proximity of the project area that could be damaged or dismantled.

3.8 **Road Access**

The said Project area has road accessibility as it is accessible through Lahore-Kasur Road, Ferozepur Road which is infront of the factory main gate.

Figure 3.2 Road Access

3.9 **Vegetative Features on Site**

The area around the project area is industrial., the vegetative features of the area include; safeda, bari, neem and kikar.

3.10 **Cost and Magnitude of Operation**

Cost includes land cost, Building & Infrastructure cost, machinery cost, land scaping cost. Total cost of the project is PKR 80 Million (Approx.).

3.11 Schedule of Implementation

The schedule of implementation for the commencement of the civil work involved for the installation construction and operational maintenance is approximately 12 months and the detail timeline of the construction period is given in Table below:

Table 2: Timeline for Project Development

Sr. #	Activities	3 Months			3 Months			3 Months			3 Months		
		4W	4W	4W	4W	4 W	4W	4W	4W	4W	4 W	4 W	4W
1	Detailed Designing												
2	Mobilization of Contractors												
3	Lean Development Period												
4	Peak installation Period												
5	Commissioning												*
W=48 Weeks													

3.12 Description of the project:

Project description is given in details in the preceding. Additional information is provided as under:

3.12.1 Products:

Pharmagen Limited is a leading manufacturer of Active Pharmaceutical Ingredients (API's), Penicillin and Cephalasporin. Capacity of the Unit will be 200 TPA of pharma product.

3.12.2 Manufacturing process:

Major steps of manufacturing process are described as under:

Step 1: Formation of GVNE (input=500 kg GCLE)

Reactor 1:

Addition of Venyl group with Cephalosporin neucleus

Reactor 2:

Removal of 50% Methanol (Process requirement)

CF(Centrifuge)-01 & 02:

Filtration by centrifugation

Milling Machine:

Milling of product (crushing)

FBD (Fluid bed dryer) 1 & 2:

Drying of product (GVNE)

Step 2: Formation of 7- AVCA (input =390 kg GVNE)

Reactor 1 & 2:

Deprotection of Methylbenzanol

Reactor 3:

Layer separation (Purification)

Reactor 4:

Dissololution of Sodium Carbonate

Reactor 5 & 6:

Aqueous layer separation (Purification)

Reactor 7 (Enzyme Reactor):

Enzymatic reaction

Reactor 8:

Charcoal treatment (Purification)

Reactor 9:

Crystallization

CF (Centrifuge):

Filtration of the product through centrifugation

FBD (fluid bed dryer):

Drying (final product 7-AVCA)

3.12.2.1 Boiler

To fullfill the energy need boiler installation has also been proposed. The salient features of boiler is as follows: .

Specification of Boilers

Sr.#	Parameter	Capacity
1	Capacity of Boiler	6 TPH.
2	Fuel of Boiler	Biomass including Rice Husk, Bagass, Corn Stalk, Cotton Stalk, Mustart Straw, Coal (0-50mm)).
3	Company	JINMA, China
4	Boiler Type	Double Drum Water Tube Boiler with Reciprocating grate
5	Efficiency	85.87 %
6	Fuel Consumption	220 Kg/ton @ 3300 Kcal/kg, 20 % moisture

The manual for boiler has been attached with annexure

3.12.2.2 Construction of Admin block

Administrative block will an open and large area with many cabins, admin office, reception and waiting area. Circulation space and waiting area together consumes some area. Store and staff dining will be provided adjacent to the office. Cabins in the administrative office section are of different size. It includes different working table can also be fitted into the space behind the table to give a functionally designed cabin and the rooms are open and well designed.

Engineers section

In this section some rooms will present for the engines. And the launch will also present for the workers

Utility section

In this section the manger and supervisors will present to maintain the power of industry. They will monitor all type of machinery, boilers, generators and electricity.

Quality section

This section will also contain of some rooms and cabins where the quality inspectors and mangers will present to inshore the quality of raw material and final product.

Compliance department

This department will contain of rooms and cabin also. Some compliance officers, management of compliance, HSE officers will work from hare. They will ensue the environment, health and safety police of industry.

Meeting rooms

Board room

An enclosed room will be equipped with appropriate information and communication technology. Board room will be provided to hold meetings of the committees. The principal furniture in the board room will a large rectangular table with chairs around it.

Lighting and ventilation

Day-lighting will strategies that potentially reduce the need of artificial lighting will be provided. The front walls of the entrance and the common visiting lounge are glazed to receive maximum sunlight. Good lighting will available with a vast entrance, giving a pleasing environment within the building. Good distribution of light will be achieved by providing tilted or sloping portions along three sides of the opening so that the sunlight falling on it will get reflected towards the first- floor. Ventilators and windows in the northern side will also provide excellent means of ventilation and lighting. Besides, artificial lights will also be provided according to the requirements. The openings will be oriented in such a way that maximum possible effort will made to prevail air during summer.

Warehouse

Warehouse for storage of raw chemicals, middle product, waste storage, discarded material and final product different storage sections will be constructed. Before constructing the storage halls, the section of process will be noted and storage hall for each section will be constructed near to same process. The purpose of the construction is to provide adequate space for storage of materials and final product. Proper ventilation, emergency exits and storage/ stacking SOP's will be followed.

3.12.3 Wastewater Treatment

The already existing wastewater treatment plant has capacity of 100 m3/day which will be enhanced upto 150 m3/day. The treatment technology is biocleaner type/ activated sludge process. The layout and process flow has been attached with report.

3.13 Relocation and Rehabilitation Plan

There exists no human settlement within premises of the selected project site to be displaced as a result of the proposed project. Moreover, no structure of any significance stands at the site is proposed to be relocated. The project area is owned by the proponent

and is going to be constructed within the plant vicinity. So, no restoration and rehabilitation are required.

3.14 List of Machinery

List of Machinery is as under:

Table 3: List of Machinery

Sr. No	Major Machinery
A	Boiler
B	Reactors
C	Condensing Systems
D	Hot Water Tanks
E	Centrifugal Machines
F	Vacuum Pumps
G	Fluid Bed Dryers
H	Fitz Mill
I	Transfer Pumps
J	FBD Trolleys
K	Chemical Headers
L	Decanter
M	Solvent Storage Tanks
N	Chillers
O	RO Plant
P	Material Lifts
Q	Cooling Towers
R	Scrubbers
S	Weighing Balance
T	Hand Pallet Truck
U	Air Storage Tanks

3.15 Amenities

The following social amenities are present at site and the management of the waste (construction waste, solid waste and effluents) is explained in sub-sections below:

3.15.1 Electricity Consumption

Electricity consumption will be fulfilled by WAPDA and Power engines. In future the management has planned to move towards energy efficient way of solarization.

3.1.1. Ground Water Resource

During constructional and operational phase ground water will be consumed. The water will be pumped from ground through turbine. the water consumption will be 120450 m3/ year. Water balance has been provided with annexure.

3.15.2 Management Plans

Following management plans will be employed to reduce the impact of the proposed activity:

3.15.3 Air Emissions

Air emissions will be generated while continuous operation of generator and boiler etc. may deteriorate the quality of air in the open area. No other emissions will be generated from process related activities.

To deal with the pollution generated from these activities, regular monitoring and testing of generators and boiler will be carried out to ensure compliance. The workers dealing with the process activities will be provided with masks, safety shoes and all other necessary PPEs. To reduce the public nuisance native trees will be planted on the boundary to reduce the nuisance and to reclaim the disturbed soil effectively.

3.15.4 Wastewater Management and Disposal

In the proposed project the wastewater will be generated from washing of reactors and other machineries, municipal and domestic activities. This wastewater will be

transfer to the waste water treatment plant where the water will be treated and the results of the final discharge water will be maintained according to the PEQS and then discharge to irrigation Nala (Kot Mela Ram) near by the industry. The management has obtained approval for discharge of wastewater from irrigation department.

It is proposed that tree plantation will be carried out around the premises of project area. The generated wastewater will also be consumed for on-site horticultural activities after treatment.

3.15.5 **Waste Management**

The solid waste will be generated during the cooking in the worker's mess and during processing like batch preparation and other packaging waste. The solid waste which will produce during process activities which will be sold out to EPA certified contractor. The contract with EPA certified body AT Waste Management Company has been done which is attached with annexure. Regular training will be given to the workers dealing with the waste management it will include identification, segregation and management of waste. Other waste producing from the admin block, warehouse will go to the municipal waste committee

3.15.6 **Emergency Preparedness**

Emergency response preparedness committee will be formulated consisted of heads of all departments and nominated members. Project Manager will be the head of the team who will chair the Committee. In the case of emergency, he will immediately inform the concerned authorities. HSE Manager will be responsible for on-site HSE management.

First aid facilities will be available at facility which will include; blankets, hot water bottles, sterilized dressing, snake bite kit, cotton and iodine (2% alcohol).

3.15.7 **Safety Trainings**

Skilled, semi-skilled and un-skilled staff will be provided with proper training about the work and safety practices that need to adopt during the process activities.

3.15.8 **Use of Drugs and Narcotics**

Drugs and narcotics are strictly prohibited during working hours in working area. Smoking will be only allowed during rest timings at properly isolated places.

3.15.9 **Personal Protective Equipment**

Following Personal Protective Equipment (PPEs) will be provided to the workers:

- Safety Helmet
- Coveralls
- Safety Shoes
- Dust Mask
- Safety Gloves
- Safety goggles
- Ear plugs/ muffles

CHAPTER 4
DESCRIPTION OF ENVIRONMENT

CHAPTER 4: DESCRIPTION OF THE ENVIRONMENT

4.1 General

An environmental baseline study is intended to establish a database against which potential project impacts can be predicted and managed later. The EIA of the proposed Project covers a comprehensive description of the project area, including environmental attributes which are expected to be affected by the project, as well as, those which are not expected to be directly affected by the construction and operation of the project. The existing environmental conditions around the proposed project have been considered with respect to physical, biological and socio-economic aspects. Site visits were conducted to survey the field area and to collect environmental data on physical, biological and socioeconomic parameters. Further, consultations were held with the general public and stakeholders of the project area in order to seek the public opinion on the implementation of the proposed project

4.2 Methodology

The methodology employed to collect the baseline data and information regarding the social structure and various related parameters as discussed in sub-sections below:

4.2.1 Data Collection

The primary data was collected by visiting the project area and its communities in its nearby vicinity. The secondary data regarding physical parameters (topography, geology, seismology, and climate) was obtained by visiting relevant various government departments and their official websites. The biological parameters such as flora and fauna were studied by preparing a floristic list based on visual observation and fauna was studied by using opportunities approach. The species were recorded with reference to their existence in the project area. Information on wildlife fauna species (mammals, amphibians, reptiles, birds, etc.) in the assessment area was compiled based on opportunistic observation, gathering the existing information and consultation with local experts, community members and government and Non-Government

Organizations (NGOs). The socioeconomic aspects were studied and analyzed by studying detailed village profile and by conducting household surveys.

4.2.2 Social Survey

The purpose of social survey was to record the present condition of the people living in the project area and to assess the expected project impacts on their life, subsistence systems and socio-cultural conditions. Prior to conducting the field surveys, the following steps were taken:

- Clear boundaries of the project area were identified
- Decided the sampling procedure in order to draw a representative sample size of the target population and households
- Developed the tools for data collection i.e. questionnaires to access the socio-economic status of the area

4.2.3 Sampling Design

Social baseline data of the persons residing in the study area has been estimated and collected through random sampling by using pre-developed questionnaires.

4.2.4 Questionnaires

In order to test the validity and reliability of the proposed questionnaires, they were reviewed to assess whether questions needed to be clarified, changed or re-sequenced and then a final editing of questionnaires was conducted prior to their application in the project area.

4.3 Data Editing and Analysis

The filled questionnaires and recorded information were compiled by the same field investigators who were involved in the data collection. This was done immediately after completing the field investigations. Data sets were processed. Analysis of the data and

preparation of conclusions in the minimum possible time was done using statistical techniques of data analysis.

4.3.1 Review of Legal and Administrative Framework

The objective of reviewing legal and administrative framework is to obtain information on all legislation pertaining project development. The Socio-Environment Team of Tti Testing Laboratories reviewed the environmental policies, national, international and provincial laws and guidelines relevant to the development of project which helped in systematic identification of impacts.

4.3.2 Baseline Conditions

Baseline conditions refer to the existing physical, environmental and socio-economic status of the project area. On the basis of baseline information, the project interventions are assessed and mitigation measures are proposed. The baseline information also helps to indicate the specific issues to be monitored during construction and operational phases. The baseline data (physical, biological and socio-economic parameters) related to the project area is described below. Information provided is based on primary and secondary data collected by site visits, desk studies and consultation with locals respectively. This section gives the overview of the topology, geology, seismology and meteorological conditions of whole city whereas, it gives detailed information about the surface water, ground water and air quality of the project area. The detail of each parameter is discussed in sub-sections below:

4.4 Physical Resources

The physical resources consist of existing land form and land use at the project site including geology, hydrology, meteorology and climatology. The pre-project condition (i.e., baseline) of these components of the physical environment is described in detail. To identify the potential impacts on the physical, biological and socio-economic environment that is likely to arise from the project activities.

4.4.1 Geography and Geology

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

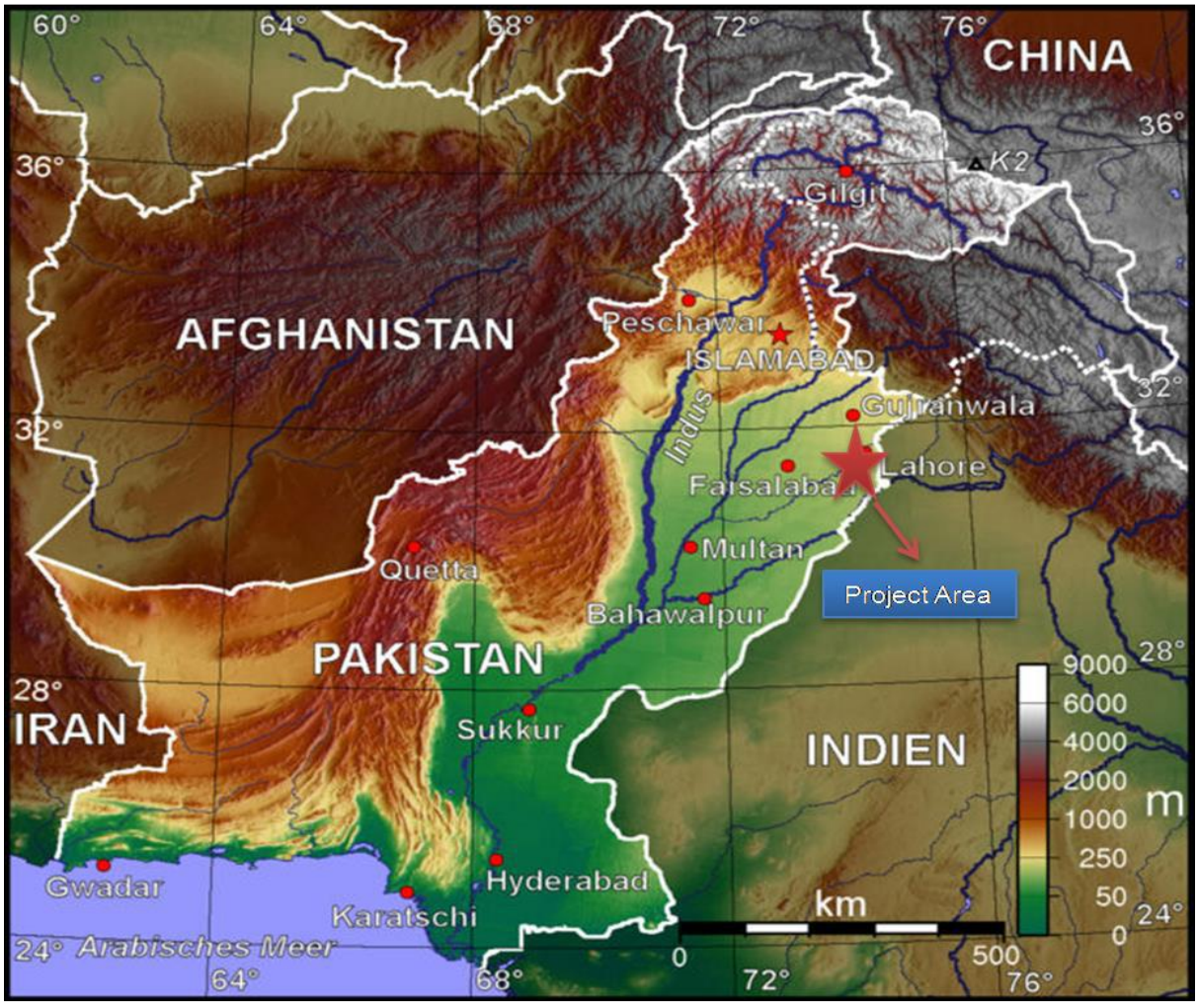


Figure 4.1 Figure showing project location

Reference: *Environmental Impact Assessment of construction of alternate route to circular road from New Azadi Chowk to Masti Gate by Fizza Batool.*

Hydrology and ground water

The Study Area forms the upper part of Punjab plain, which is a part of the Indo- Gangetic depression. This depression is of a synclinal nature. Synclinal depression is a fore deep downward of the Himalayan foreland of variable depth, converted into flat plains by simple process of alluvial deposition. It is part of the large inter alluvial upper Bari Doab, which is bounded by the Ravi River in northwest and the Sutlej River to the southeast. The Bari Doab along with other Doabs like Rechna, and Chaj form the vast alluvial plain of the upper Indus Plain in Punjab.

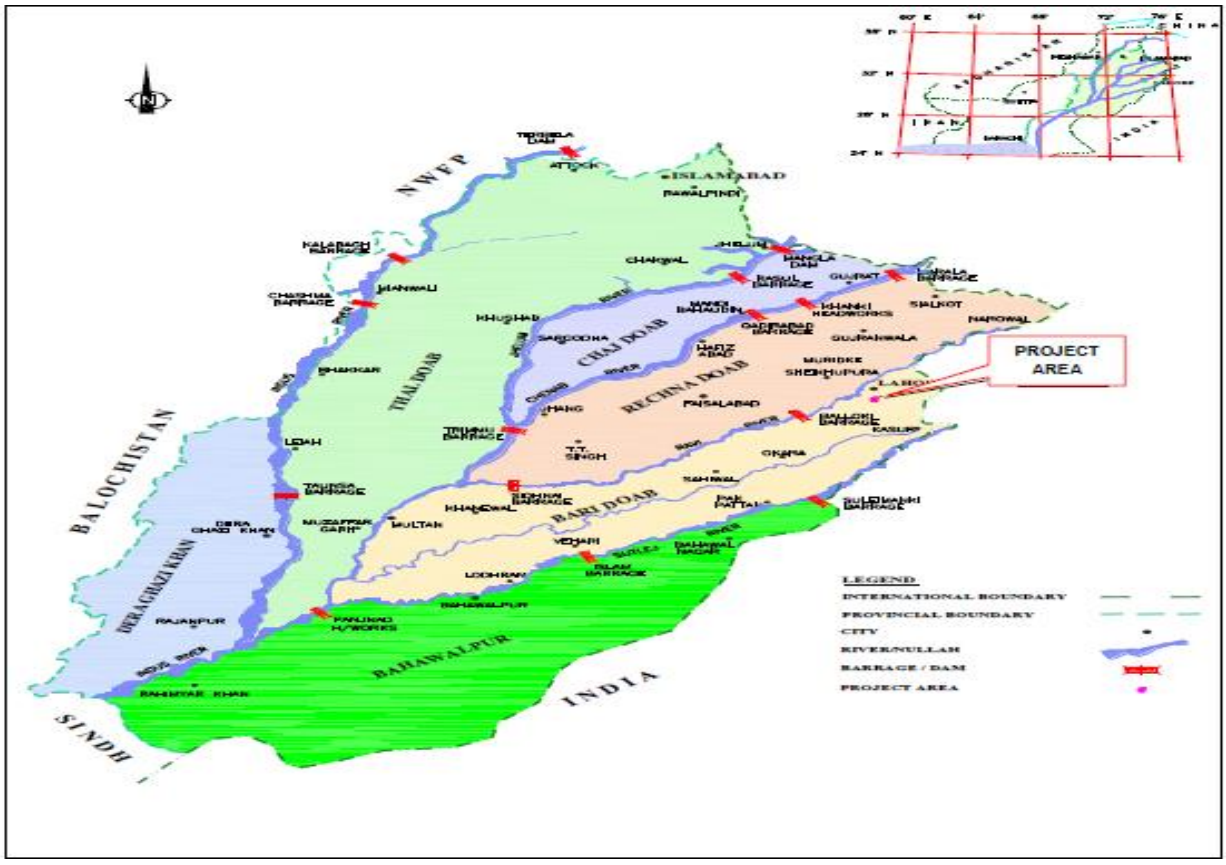


Figure 4.2 Hydrology of area

4.4.2 Climate & metrology

Seasonal climatic conditions must be considered for the design and execution of Project.

The climate including air, temperature, precipitation, humidity and evaporation

is an influencing factor, affecting the construction of plant and other engineering structures. However, to determine the overall effect of the climatic stresses, daily and seasonal temperature changes, site altitude, direct solar radiation, and precipitation must be considered. The Project Area has extreme climate: it has hot summer and cold winters. The summer starts from April and lasts till September. May, June, and July are the hottest months. The mean maximum and minimum temperature ranges from 40.4 ºC and 27.3 ºC respectively for these months.

The winter seasons lasts from November to March. December, January and February are the coldest months. The mean maximum and mean minimum temperature ranges from 19.8ºC to 5.9ºC in January. Temperatures in the Project Area vary from 5.9 ºC to 40.4 ºC.

The project area receives rains in all the seasons but monsoon rain is pronounced and constitutes a definite rainy season between the month of July and September. The average rainfall is about 629 millimeters per year.

Average Monthly Temperature, Precipitation and Relative Humidity (2004-2008)

Month	Mean Temperature		Precipitation (mm)	Relative Humidity AT 0500 HRS (%)	Relative Humidity AT 2000 HRS (%)
	Maximum	Minimum			
January	19.8	5.9	28.92	80.4	51.9
February	22.0	8.9	37.14	79.0	52.4
March	27.1	14.0	34.3	68.6	42.2
April	33.9	19.6	44.32	50.2	25.3
May	38.6	23.7	24.38	45.7	27.2
June	40.4	27.3	91.62	59.1	40.9
July	36.1	26.8	150.52	76.7	60
August	35.0	26.4	161.42	78.8	65.9
September	35.0	24.4	67.28	74.4	56.4
October	32.9	18.2	11.74	70.6	44.2
November	27.4	11.6	4.44	77.1	48.8
December	21.6	6.8	9.94	82.9	53.73
Annual	**30.8**	**17.8**	**666**	**70.34**	**47.4**

Source: *Meteorology Department Lahore*

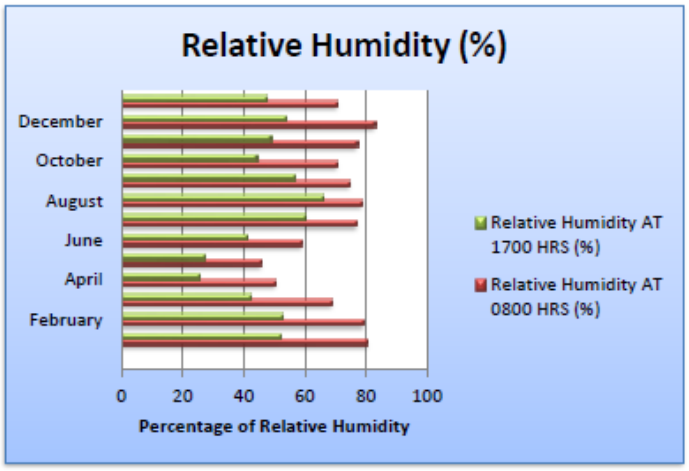


Figure 4.3 Relative Humidity in the Study Area (2005-2008)

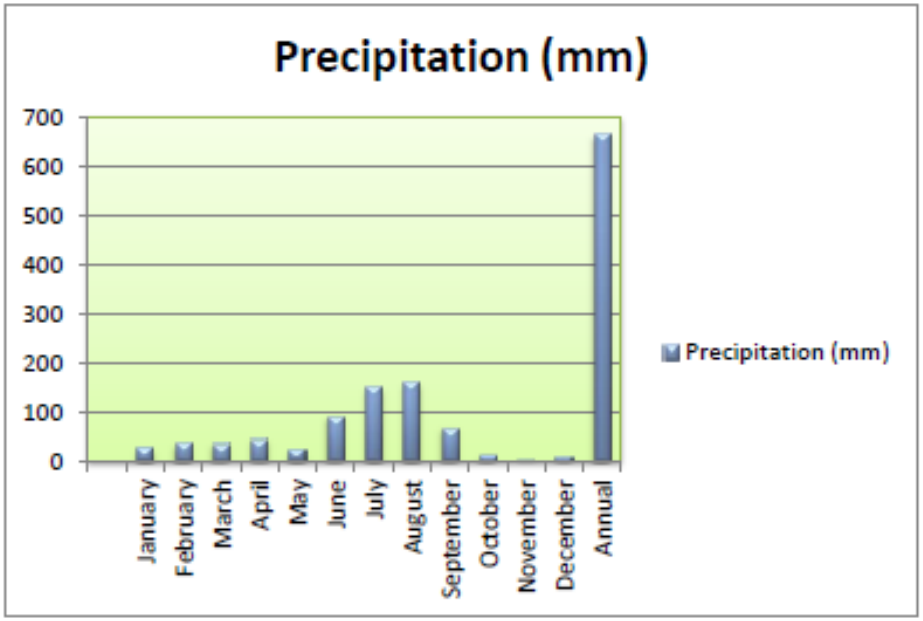


Figure 4.4 Average Rainfall in the Project Area (2004-2008)

Wind Speed and Direction 2008

Wind Speed m/sec	N	NE	E	SE	S	SW	W	NW	All Dir.
0									4906
1	2	2	9	4			3	3	23
2	74	108	120	162	51	87	199	132	836
3	72	235	70	258	26	174	163	320	1318
4	34	49	39	101	5	41	112	75	456
5	51	103	25	151	13	73	64	221	701
6	18	10	18	22	3	4	14	23	112
7	20	41	3	42	5	19	16	52	195
8	7	2	2	3			3	8	25
9	10	9	2	15		1	13	11	49
10	12	5		6		1	31	5	32
11	1							3	5
12	1	1				1	1	4	7
13		2		1			1	3	7
14							1	1	2
15	2					1		1	5
16									
17								1	1
18	1					1	1	2	5
19									
20 or above	1					1			2

Source: Meteorology Department Lahore

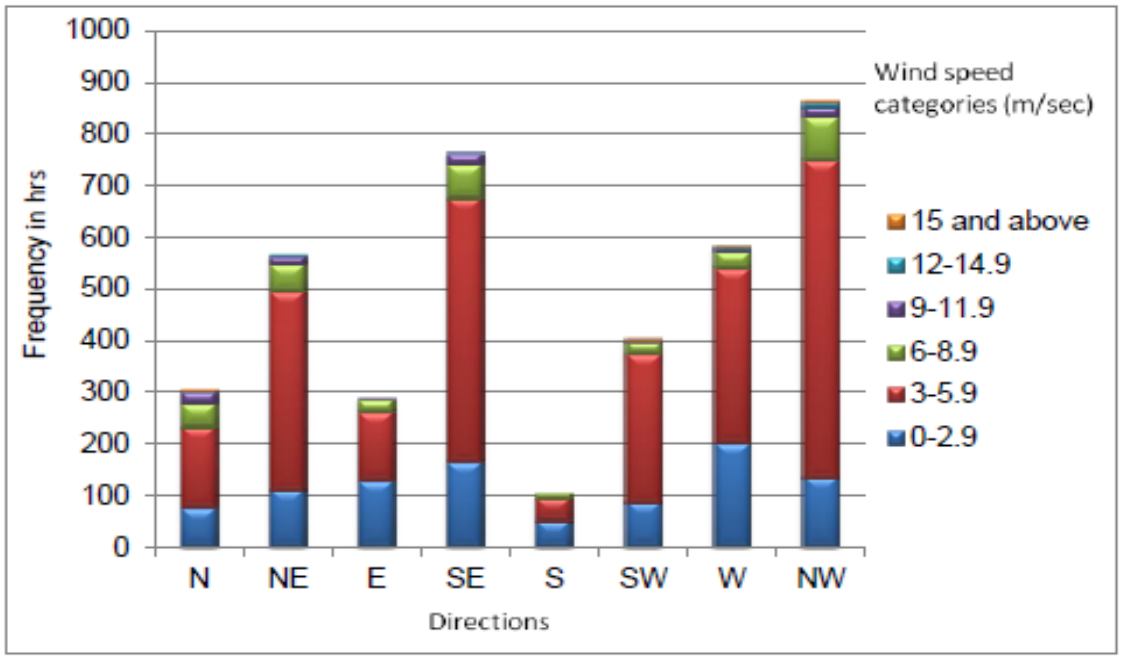


Figure 4.5 Wind Speed and wind direction in the city of Lahore 2008

Reference: *EIA of Construction of Lahore Orange Line Metro Train Project (Ali Town – Dera Gujran)*

4.4.3 Noise Level

Noise level in different areas of Lahore is as follows:

Sr. #	Location	Max. Noise Level (dB)
1	University of Lahore	82.9
2	Mansoora	87.0
3	Chouburji	81.6
4	GPO Chowk	73.4
5	Daroghawala Chowk	76.3
6	Jamia Masjid Anwar e Madina	83
7	Himayat e Islam .College	80.6
8	Australia Masjid	81.3
9	Ali Hospital	84.5
10.	UET Gate No. 3	70.3
	NEQS Limit	**80**

4.4.4 Ambient Air Quality

Atmospheric pollution, particularly in urban areas like Lahore, has a strong impact on daily life. Motor vehicles are a major source of air pollution. Factories and cottage industry inside the Lahore City are also contributing to air pollution. Sulphur dioxide (SO2), Nitrogen dioxide (NO2), Carbon dioxide (CO2), Carbon monoxide (CO), Ozone (O3) and particulate matter (PM10) are considered pollution indicators. Air quality of Lahore at different points is as follows:

Sr. No.	Location	Monitoring Duration	Parameters			
			NO_x µg/m³	SO_2 µg/m³	CO mg/m³	PM_{10} µg/m³
1.	UOL	24 hr	<0.01	<0.01	2.1	284.17
2.	Mansoora		<0.01	<0.01	3.24	269.83
3.	GPO		5.15	18.03	1.93	110.3
4.	Daroghawala		6.04	18.32	2.07	120.37
5.	Chouburji		26.33	25.26	2.81	202.65
6.	Jamia Masjid Anwar e Madina		<0.01	<0.01	1.16	176.04
7.	Himayat e Islam .College		<0.01	<0.01	1.80	150.04
8.	Australia Masjid		<0.01	<0.01	1.79	148.75
9.	Ali Hospital		19.75	25.26	2.26	155.42
10.	UET Gate No. 3		11.01	19.20	1.51	131.5
		NEQS Limit	**120 for 24 hrs**	**120 for 24 hrs**	**5 for 8 hrs**	**150 for 24 hrs**

4.5 BIOLOGICAL ENVIRONMENT

4.5.1 Flora

Several types of floral species are present in Lahore as well as project area, however, some of the principal trees, are given below in Table

No.	Common Names	Botanical Names
1	Arjun	*Terminalia arjuna*
2	Dhak	*Butea frondosa*
3	Mahwa	*Bassia latifolia*
4	Bahara	*Terminalia bellerica*
5	Amaltas	*Cassia fistula*
6	Gul-e-nishter	*Erytrina subrosa*
7	Barringtonia	*Barringtonia acutengula*
8	Nim	*Melia indica*
9	Gab	*Diospyores embryopteris*
10	Berna	*Crateva religiosa*
11	Khark	*Celtus australis*
12	Putajan	*Putranjiva roxburgi*
13	Fiddle wood/Kashmir Lagotis	*Eithrxyllum ruberratum*
14	Gul-e-mast	*Dalinia indica*
15	Gul-e-mohr	*Poinciana regia*
16	Alstonia	*Alstonia scholaris*
17	Ashoke	*Saraca indica*
18	Sheesham	*Dalbergia sisso*
19	Alata	*Stercolia colorata*
20	Kenair	*Nerium grandiflora*
21	Weeping Willow	*Salix babylonica*
22	Keekar	*Parkinsonia aculeata*
23	Nilem	*Jacaranda mimosfolia*
24	Kachnar	*Bauhinia purpurea*
25	Molsary	*Mimosop elengi*
26	Bel	*Aegle marmelos*
27	Siris	*Albizia lebbek*
28	Tun	*Cedrela toona*
29	Jamin	*Eugenia jambolana*
30	Moor pankh	*Thuja orientalis*
31	Silkoak	*Grevillea robusta*

4.5.2 **Fauna**

Mammals

Common mammals found in the area are dogs, cats, house rats and bats.

Reptiles

Snakes such as cobra, kraits etc. were once common in the tract, but now cases of snake bites are very rare, as these reptiles have been either killed by expanding urbanization or they have moved away. Lizards such as Spiny tailed lizard (Uromastix hardwickii)

and fringed toed lizard (Acanthodactylus cantoris) are also reported by the residents of the area.

Amphibians

Amphibians frequently seen in and around the project area, especially during rainy season, include common Frog (Rana tigrina) and Indus valley toad.

Birds

House sparrow (Passer domesticus), House crow (Corvus splendens) and Mynah (Acredotheres tristis) are the most common sight in the area.

There are no endangered species of flora and fauna in the Study Area.

4.6 SOCIOECONOMIC ENVIRONMENT

Socio economic environment is represented by the human and economic development and quality of life values. For the study of socio-economic environment of the project area, field surveys were conducted and interviews were held with the general public and neighbors. The baseline conditions of the city are as follow:

4.6.1 Demography

The total population of Lahore District was 6,318,745 as enumerated in March 1998 with an intercensal percentage increase of 78.3 since March 1981 when it was 3,544,942 souls. The average annual growth rate of population in the district during intercensal period 1981-1998 was 3.5 percent. The total area of the district is 1772 square kilometers, which gives population density of 3,566 persons per square kilometer as against 2000 persons observed in 1981 indicating a fast growth rate of the district. Table 4.9 gives population, its intercensal increase and average annual growth rate since 1951 of Lahore district.

Description	1951	1961	1972	1981	1998
Population (in 000's)	1,135	1,626	2,588	3,545	6,319
Intercensal Increase (%)	43.3	59.2	37.0	78.3	-
Average Annual Growth Rate (%)	3.7	4.1	3.8	3.5	-

Source: *DCR of Lahore District, 1998*

Reference: *EIA of Construction of Structural Road from Expo Center to Ring Road (Parallel to Canal Bank Road)*

4.6.2 **Industries**

After Karachi, Lahore is the biggest industrial area in Pakistan. There has been a steady expansion of industries in and around Lahore since independence. There are many large industrial units in the district. These units manufacture cotton, woolen and silk cloths, carpets and rugs, textile products, lather and rubber foot wears, wearing apparel, pharmaceutical goods, soap, iron and steel products, heating, plumbing and lighting equipment, hardware, miscellaneous fabricated products, agriculture machinery, engines and turbines, textile machinery, printing machinery, metal working machinery, pumps and compressors, household machinery, water generators, motor generators, transformers, electric fans, communication equipments, cycles and rickshaws. There are also a good number of printing and publishing units and body building workshops. Besides, there are units of canning and preservation of food, edible oils, beverages, metal and wood furniture, rubber products, chemicals, glass products, repair of railway equipment, toys, stationary etc.

4.6.3 **Educational facilities**

In the project area some educational institutions are found which include Allied School, Kips School, Dar-e-Arqam School and Punjab School. Overall in Lahore, educational facilities are mainly being provided by the Government of Punjab, the city government and the private sector and voluntary organizations. To a limited extent the high school education is also being managed by the Federal Government through the operation of

few institutes located in the cantonment area. Of the total educated persons 12.6 % are below primary, 23.2 % had passed primary, 22.5 % middle, 18.2 % Matriculation, 9.3 % Intermediate, 7.2 % Graduates, 2.6 % Post graduates while 0.6 % were certificate holders. Total number of Government schools in Lahore District is 409 out of which, 223 are boy schools and 186 are girls schools while total number of students studying in these schools are 121,417 out of which, 46,625 are boys while 74,792 are girls. Similarly, total numbers of Municipal Corporation based schools in Lahore are 103 out of which, 44 are boy schools and 59 are girl schools. In these 44 boy schools total number of students is 4,575 and the total number of girl students is 9,606. Similarly, there are number of colleges and universities are dealing with all fields of Science and arts. The numeric details of these institutes are given in Table

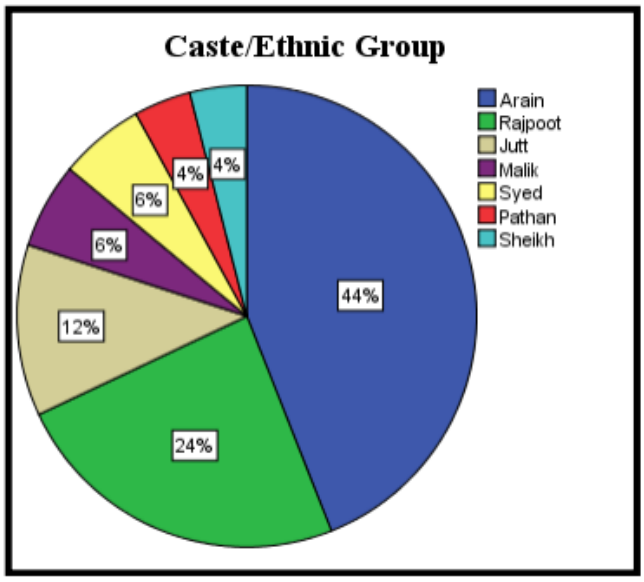
Sr. No.	Type of Institutions	Number	Number of population served
1	Higher Secondary Schools and Intermediate Colleges	36	182990
2	Degree Colleges	38	173359
3	Universities	52	48025

Source: *DCR of Lahore District, 1998*

4.6.4 **Quality of life values**

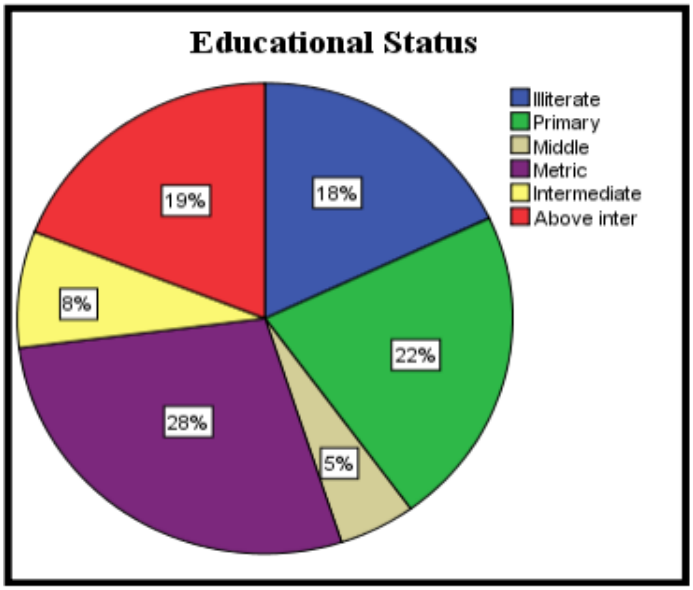
4.6.4.1 Caste / Ethnic Group

According to baseline survey, it was found that the largest part of the respondents i.e. 44% were Arain. While 24% were Rajputs, 12% were Jutt and 06% were Syed and Malik each. While 04% were Pathan and Sheikh each.



4.6.4.2 Educational Status of the Respondents

Educational attainment for sampled population of project area is not very low because out of 100 respondents, only 18% were illiterate. Primary school respondents were 22%. While 06% went to middle schools, 28% were up to metric level, 08% had passed the intermediate and 19% of the total respondents had got education above intermediate.



4.7 LAB REPORTS OF ENVIRONMENTAL ANALYSIS

Testing of different parameters was done by EPA certified laboratory to check the quality of different environmental parameters. The copy of the lab reports of these parameters (ambient air analysis, water quality analysis and noise) is given in annexure.

CHAPTER 5

STAKEHOLDER CONSULTATION

PHARMAGEN LIMITID

CHAPTER 5: STAKEHOLDER CONSULTATION

5.1 GENERAL

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

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

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

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

5.2 OBJECTIVES OF CONSULTATION

Public consultation plays a vital role in studying the impacts said project on stakeholders in its successful implementation and execution. It provides an opportunity to

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

5.3 IDENTIFICATION OF STAKEHOLDERS

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

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

5.3.1 **Direct**

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

5.3.2 **Indirect**

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

- ✓ Government agencies responsible to deal with the project related activities

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

5.4 PUBLIC DISCLOSURE

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

5.5 CONSULTATION PROCESS

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

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

Various meeting with the stakeholders were held the following objectives:

- Share information with stakeholders on the said project and expected impacts on community in the vicinity of the project
- Understand stakeholders' concerns regarding various aspects of the project, including the existing condition of the upgrading requirements, and the likely impact of construction and operation activities

- Provide an opportunity to the public to influence the project design in a positive manner
- Obtain local and traditional knowledge, before decision making
- Increase public confidence about the proponent, reviewers and decision makers
- Reduce conflict through the early identification of controversial issues, and work through them to find acceptable solutions
- Dissemination of information through discussions, education and liaison
- Documentation of information narrated by the stakeholders and mitigation measures proposed by the stakeholders
- Incorporation of public concerns and their address in the EIA; and eliciting their comments and feedback

5.5.1 Consultation Methodology

The methodology adopted for consultations is summarized below.

5.5.1.1 Consultation Material

The main document for distribution to stakeholders during the consultations was Social Impact Assessment Interview. The filled Survey forms of stakeholders are annexed

5.5.1.2 Consultation Mechanism

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

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

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

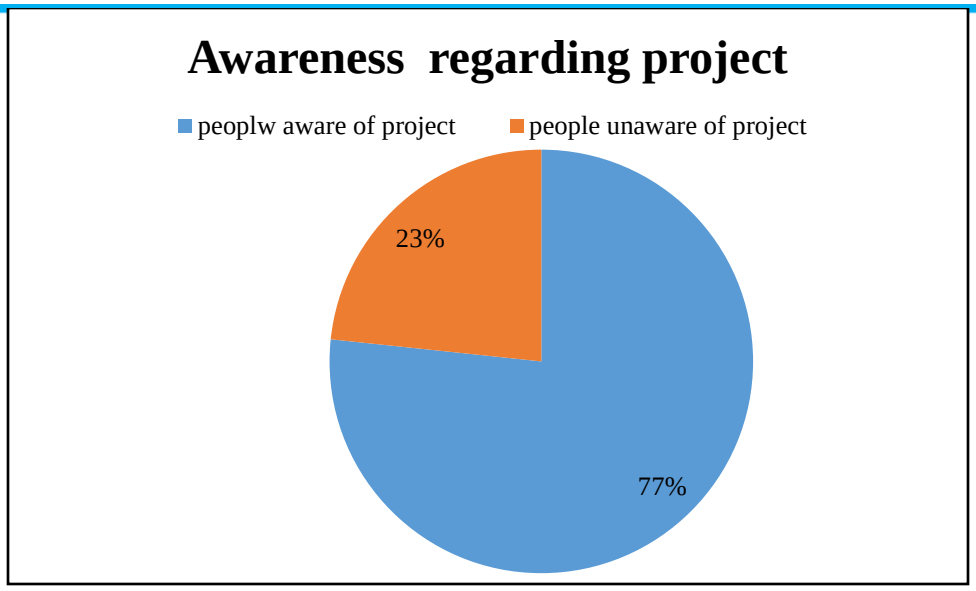
5.5.2 **Primary Stakeholders Consultation**

The community consultations were conducted with the community members outside their settlements to encourage and facilitate their participation.

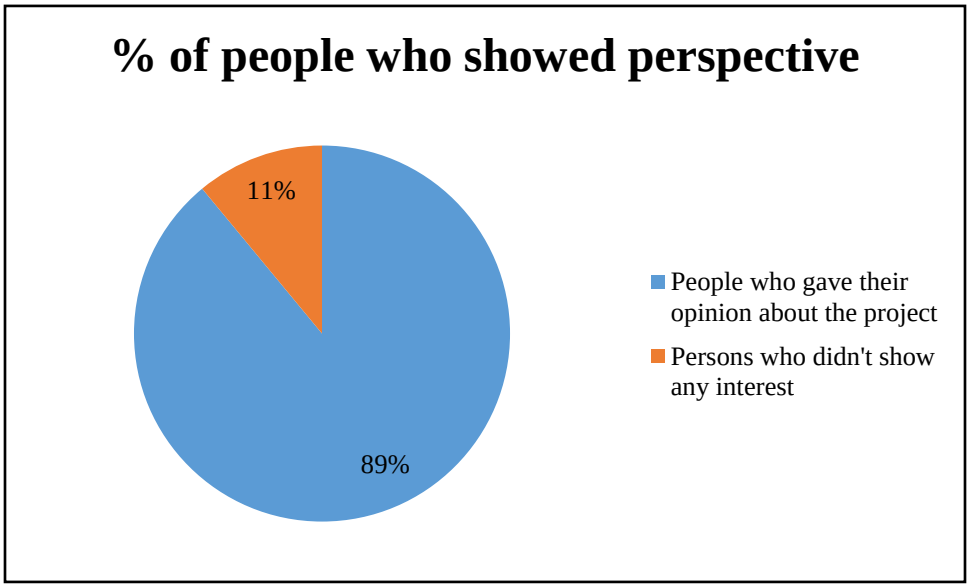
5.5.2.1 STAKEHOLDER CONCERNS AND RECOMMENDATIONS

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

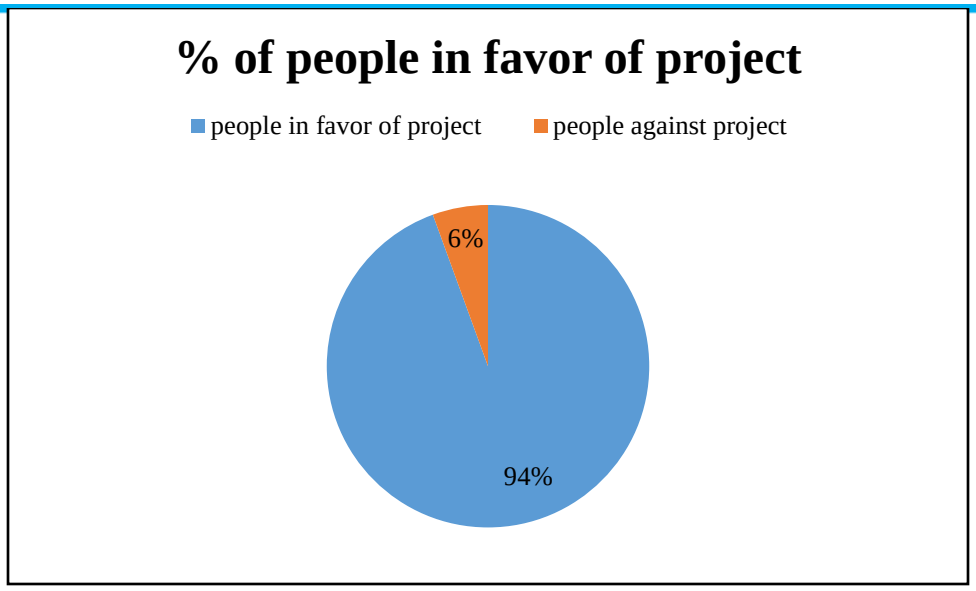
Out of total respondents of, 77% knew about the project whereas 23% were not aware of the project planning and implementation. All people were then briefed about the project.



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



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



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

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

5.6 STAKEHOLDERS CONSULTED

Names of consulted stakeholders are given in table below:

Table 5-1: List of consulted stakeholders

Sr. No	Stakeholder name
1.	Muhammad Hakim
2.	Abdulaziz

3.	Asghar Ali
4.	Kashif Ali
5.	Parvez Hussain
6.	Muhammad Naeem
7.	Muhammad Zulfiqar
8.	Muhammad Waqar
9.	Muhammad Arif
10.	Muhammad Javed
11.	Muhammad Jalal
12.	Muhammad Tofail
13.	Syed Barat Hussain
14.	Arif Khan
15.	Basheer Hussain
16.	Saddam Hussain
17.	Muhammad Javed
18.	Muhammad Aslam
19.	Hameed Ahmad
20.	Muhammad Zafar
21.	Muhammad Maqsood
22.	Muhammad Aslam

5.6.1 **Secondary Stakeholders Consultation**

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

1. District Office Environment
2. Proponent
3. Environmental Precautionar

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

S#	Participant	Designation	Concerns/Remarks
Responsible Authority			
1	Mr. Rafiq	Inspector Environment	• Environmental enhancement measures such as; Tree plantation, monitoring and safety should be ensured • HSE plan should be enforced strictly • Should work for local people benefit • Preventive measures should be adopted to avoid any unfortunate incident
Proponent			
1	Jawad Ur Rehman	Representative of Proponent	• Local employment will be ensured • Tree plantation will be done to make project environment friendly • No waste will be dumped improperly • Quality will be ensured
Environmental Practitioners and Experts			
1	Dr. Muhammad Faqir Irfan	PhD. Environment Lawyer	• Health and safety arrangements must be provided

CHAPTER 6

POTENTIAL ENVIRONMENTAL IMPACTS AND MITIGATION MEASURES

CHAPTER6: POTENTIAL ENVIRONMENTAL IMPACTS AND MITIGATION MEASURES

6.1 GENERAL

This chapter describes the potential environmental and social impacts of the proposed activities, predicts the magnitude of the impact and assesses the significance. The main intention of this section is to provide the mitigation measures that need to be adopted wherever necessary, to reduce, minimize, or compensate for the negative impacts.

6.2 IDENTIFICATION OF POTENTIAL IMPACTS

In the first step, potential impacts of the project are identified by desktop screening exercise, using checklists during field visits for collection of baseline data, professional judgment, published literature on environmental impacts of similar projects and standard environmental guidelines. Potential impacts are also identified through discussion with project proponent, consultation with stakeholder and community to identify their concerns. The main aspects associated with potential impacts are as follows:

- Water resources
- Ambient Air Quality
- Waste discharges
- Noise pollution
- Ecology of the area, including flora and fauna
- Vehicle movement
- Socio-economic conditions
- Archaeology

6.3 CLASSIFICATION OF IMPACTS

According to the type of potential receptors, the potential impacts are classified. The following receptor categories were used.

Category of Receptor	Description
Community	People their social and cultural values, aspirations and archaeological sensitivity
Land and Soil	Land resources, soil resources
Air Quality	Ambient air quality
Water Resources	Ground and surface water resources
Ecosystem	Vegetation, wildlife and biodiversity

6.4 SCOPING CRITERIA FOR IMPACTS

The identified potential impacts of the project are evaluated on the basis of following criteria;

- The present baseline condition, the change in environmental parameters likely to be affected by the project related activities;
- Is there any impact that environmental standards or environmental guidelines applicable to the project will be breached?
- Is there a high risk of permanent, irreversible, and significant change to environmental condition due to particular project activity?
- Did the community express any concern about this aspect?

6.5 METHODOLOGY FOR IMPACT ASSESSMENT

The impact assessment methodology defines three levels of consequences (or severity) and likelihood (chance of occurrence) i.e. Low, Moderate/Medium or High. The significance of an impact is determined on the basis of the level of consequence and likelihood of the impact.

Table 6-1: Definitions of severity and likelihood of impacts

Level	Severity of Impact (Consequence)	Likelihood
High	Serious / catastrophic damage to local and regional environment Serious threat to corporate reputation/ profitability / ability to do business	High likelihood of occurrence during lifetime of operation Regular / continuous part of operations
Moderate	Measurable damage to the environment Potential to affect reputation / cost Reduced efficiency	Moderate possibility of occurrence during lifetime of operation Periodic / occasional part of operations
Low	Negligible damage to the environment No risk to business	Unlikely to occur during lifetime of operation

Table 6-2: Impact Significance Matrix

		Likelihood (Probability of occurrence)		
Impact (Consequence)		**High**	**Medium**	**Low**
	High	High	High	Medium
	Medium	High	Medium	Low
	Low	Medium	Low	Low

The prediction of impacts also includes the duration of impacts in terms of short-term or long-term, nature of impact, geographical location of the impact, reversibility of the impact. The criterion for impact assessment is illustrated in the Table

Table 6-3: Impact Assessment Criteria

Impact Characteristics	Categories
Nature of the Impact	**Direct:** The environmental parameters that are directly affecting by this project. **-Indirect:** The environmental parameters change due to the combinational effect by project and environmental impacts
Duration of the Impact	**Short term:** Lasting only till the duration of the project **Medium term:** Lasting from a few months to a year **Long term:** Lasting for a period much greater than medium term impacts
Geographical Location of the impact	**Local:** Within the area of project i.e. operation site and access roads **Regional:** Within the boundaries of the project area **National:** Within the boundaries of the country
Reversibility of the impact	**Reversible:** When a receptor resumes its pre-project condition **Irreversible:** When a receptor cannot resume its pre-project condition

6.5.1 What is the problem?

The project is about pharmaceutical industry, namely "Extension of Pharmaceutical Products Manufacturing Unit, Construction of Admin Block & Installation of Biomass Boiler by M/S Pharmagen Limited". The major impact associated with the construction and operation of said industry includes solid waste management, wastewater management, noise emissions, tree plantation and fire-fighting arrangements.

6.5.2 When problem will occur and when it should be addressed?

The impacts from the said industry mainly occur during the construction and operational phase of the project. These issues include; noise generation, fugitive dust emissions, solid waste management, wastewater disposal, top-soil removal, Health and Safety issues and change in the geographic features of the area. These all problems should be addressed on-site where they are being generated, to avoid the residual or adverse impacts. The tell the description and impacts to Government and public by reports and public hearing.

6.5.3 Where problem should be addressed?

The problem will be generated from site development and operation of the industry. So, it should be addressed on source, i.e. at site within the same timeframe.

6.5.4 How the problem should be addressed?

Problem should be addressed with its full detail i.e. its magnitude, possible impacts and problem, long time effect, environmental impacts, and proper mitigation measures will be provided according to the nature of the impacts/problems.

6.5.5 Ways of Achieving Mitigation Measures:

Following ways will be adopted to reduce the impacts of the said project:

6.5.5.1 Changing in Planning Design

The design of industry is developed considering environmental risk and hazards. As the area is industrial lot of industries are present there. Moreover, there is no endangered and threatened species present in the project area. Any human settlement or infrastructure was not dislocated or dismantled due to the project development. The proper roads and transportation system along with migration measures is there. The project is fare away from urban development. Not any impact will affect the urbanization. Hence, there is no need to change the design of the project.

6.5.5.2 Improved Management and Monitoring Practices

The anticipated impacts will be reduced significantly by adopting better management activities, as it will be carried out for the betterment of the society. While

environmental monitoring will be conducted on the regular basis to keep the sources of the air pollution, wastewater generation, noise and public nuisances in-check. All the migration measure and advance technology will be implanted to mitigate the impact. All the practices will meet the Punjab environmental standards and international standard like OSHA and AEPA.

6.5.5.3 Compensation in Money Terms

Due to the development of the project, no tree cutting is involved, however, there is no protected or environmentally sensitive area present within 5.0 km vicinity of the project that could be impacted. Hence, no compensation in the monetary terms is required.

6.5.5.4 Replacement/Relocation/Rehabilitation

The project site is owned by the proponent and reserved for the said industry. No replacement, relocation and rehabilitation is required for the commencement of the aforesaid project.

6.6 Impact Summary

Environmental Parameters	Impact Assessment during Different Phases	
	Construction	Operational
A: Physical		
Land Resources		
Soil Erosion and Contamination	0	0
Transportation	-1t	-1 t
Solid Waste and By-Products	-1t	+1p
Land Use	NA	NA
Air Resources		
Noise Pollution	-1t	-1p
Air Emission	-2t	-1p
Dust	-1t	-1t
Water Resources		
Ground Water	-1t	-1p
Surface Water	NA	NA
Wastewater	-1t	-1p

B : Ecological		
Flora		
Tree Cutting	N/A	N/A
Fauna		
Terrestrial Fauna	N/A	N/A
C: Socio-Economic		
Employment Opportunities	+1t	+1p
Land Value Appreciation	N/A	N/A
D: Hazards		
Physical Hazards	-1t	-1p
Health and Safety	-1t	-1p
Legends: 1= Low; 2= Medium; 3= High; 4= Extremely High; NA= Not Applicable; t= Temporary; p= Permanent; app= Applicable; 0= Negligible		

6.7 IMPACTS DUE TO PROJECT LOCATION

The said project site is located in area surrounded by other industries. As all the rules and migration procedure is applied. The project site is owned by the company. Further, the project site is devoid of any human habitation hence evacuation of the project-affected persons will not be involved in this project. Thus, no resettlement and rehabilitation issues will be involved in the said project. This project will be developed while undertaking minimum cutting for making terraces for construction while making minimum modifications in the terrain conditions and implementing environmental measures.

The topsoil removed from the site will be restored in dumps during construction period and in the post construction phase. The top soil will be spread on the unbuilt area of the plot and tree plantations and green belt development will be taken up. As the top soil removed from the site will be reused for the growth of plants, no adverse impact will be envisaged due to removal of topsoil from the site.

6.8 DESIGN PHASE

In general, the design of the said project optimized the use of best available technology in order to prevent or minimize potentially significant environmental impacts associated with the project as well as to ensure high level business and environmental performances. In pre-construction / design phase, a management system will be provided at design level for the reduction of impacts. Design of the said project will adhere to all standard technical requirements in order to avoid adverse impacts on the environment and human health. Efficient infrastructure will be developed. Procurement of construction materials from approved dealers will be ensured.

6.9 IMPACTS ASSOCIATED WITH CONSTRUCTION PHASE

Sr. No	Aspect	Impacts	Mitigation Measures
1	Economy Improvement	During construction phase, employment opportunities for local people will be generated. Raw material will be obtained locally increasing the economic value of area.	No specified mitigation measure is required. The contract is signed with the authorized construction companies. All of labor rules will applied on them.
2	Air Quality	During construction phase, suspended particulate matter are the main pollutants during the site development activities such as leveling of land, filling activities, transportation of construction material to the project site from various places.	Dust emissions will be minimized through strict enforcement of onsite speed controls. The routes will be sprinkled with water regularly to reduce

		Fugitive emissions will be observed due to vehicular movement. But it will be negligible or temporary phenomenon.	the amount of dust generated by construction vehicles. Construction machinery will be kept away from the walkways. All the vehicles carrying the construction material will be fully covered and well maintained. The inspection of the vehicles and construction machinery will do on regular basis. All vehicles and construction machinery will be properly tuned, serviced and monitored on regular basis.
3	Water Quality	During construction phase, water will be required for construction of structures, sprinkling on roads for dust suppression, domestic uses of construction workers	During this phase, water conservation practices will be given proper consideration.
4	Relocation of Utilities	The project site is already near other industries. The construction will not relocate the existing public utilities.	No mitigation measure is required.

5	Solid Waste Generation	During excavation of the site for foundation works and landscaping, solid waste will be generated. The waste consisted of metal cuttings, rejected materials, surplus material, paper bags, cement bags, empty cartons and broken glass pieces.	Recyclable material will be separated at source. The cement bags and other such items will be handed over to approve contractors on weekly basis. Other waste will be accumulated at waste area and will be taken by the municipal waste management company.
6	Noise Pollution	During construction phase, the major sources of noise will be due to operation of construction equipment. The anticipated noise will be mostly confined to the facility itself.	Several mitigation measures will be considered. For this purpose, most of the construction works will be done in day time. The advance machinery will be recommended to lower the noise and work efficiency. Proper PPEs (ears plugs and ears muffles) will be given to workers so that expose less to noise.
7	Ecology	The project site is located in industrial area. It was devoid of thick forest and vegetation.	After the construction, tree plantation will be done to act as pollution barrier as well as to

			enhance the aesthetic beauty of the area.
8	Worker's Health, Safety and Environment	The construction activities had the potential to pose negative impact on the health and safety of workers in case of unfavorable working conditions.	The contractor ensured that the workers and labors will be trained in safety procedures for all relevant aspects of the construction. Workers will be provided with proper safety equipment which were required on the basis of nature of the work. First aid kits will be kept available on the site to ensure safe working environment for the labors and workers. As per the requirement warning signs will be displayed in local language. Proper fencing will be done around the site. A safety officer will be appointed at the site for risk assessment and ensure the safety of workers.

6.10 IMPACTS ASSOCIATED WITH OPERATION PHASE

During the operation phase different type of the process will be done. The possible impacts of the process, Boiler, etc is being evaluated as down here.

In this section, the combined environmental and socio-economic impacts associated with the said process of this project in operation phase are discussed. The impacts that are discussed are as follows:

Environmental Impacts

- Air emissions
- Noise
- Traffic
- Solid waste and by-products
- Wastewater
- Resource Consumption
- Abnormal conditions
- Occupational Health and Safety

Socioeconomic Impacts

- Employment Opportunity
- Community Development

6.11 ENVIRONMENTAL IMPACTS

6.11.1 AIR EMISSIONS

POTENTIAL IMPACTS

Air emissions from the project are relatively small and specified. Fugitive dusts and emissions may result during raw material handling and storage which is relatively less likely to occur. Some volatile organic compounds may present due to miss-handling and unfortune events. Other potential sources for air emissions are combustion products (nitrogen oxides, sulfur dioxide, particulate matter, carbon monoxide) from

standby diesel generators, boilers and combustion products from vehicles used for project activities. Air Emissions from boilers and generator include Smog producing compounds like nitrogen oxides and volatile organic compounds. The smoke of boilers and generator produce other compounds like, Particulate matter, Carbon monoxide, Sulfur dioxide, Air Toxins (Toxics), Greenhouse Gases, Wastewater (once-through cooling water, cooling system blowdown, boiler blowdown, water-side boiler cleaning and demineralizer regenerant. The emissions from standby generators will be less in concentration. The emission levels depend on the type and quality of fuel and the manner in which it is burnt.

MITIGATION MEASURES

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

- Emissions from boiler are controlled by equipping with cyclone, scrubber and room
- Emissions from the admin block and warehouse also pass through the ventilation system including filters
- Monitoring of Ambient air parameters (Particulate matter, SOx, NOx) emissions should be carried out on regular basis to ensure compliance with the PEQS.
- Biomass fuel will be used in boiler
- The inspection and the maintenance of the boiler and generator will be done on regular basis.
- Plantation of indigenous trees within the premises and along the boundary.

RESIDUAL IMPACT

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

6.11.2 NOISE

POTENTIAL IMPACTS

The main sources of pollution from noise are during raw material and finished good loading and unloading, vehicle movements, operation of machines. The increased noise may be a source of disturbance to workers, working near to the machines. The main source of the noise id boiler. But this area is closed and separated from other operational areas. So, the Noise level during operation phase of unit will be limited to specific site. Concerned staff will be working in the area with required personal protective equipment (PPE) to minimize or reduce the noise exposure.

MITIGATION MEASURES

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

- Effective noise suppression design and plan will be made for all noise producing equipment i.e. high noise generating machines will be kept in isolation from other machines to minimize the overall cumulative noise.
- Noise barriers should be implanted
- Noise area will not be open site. The source of noise will be in closed and covered place. Where the OSH standard will be applied.
- The repairing and the small source of noise will be removed if it will possible.
- PPEs are provided to workers
- Proper tree plantation has been done
- Noise monitoring will be carried out periodically.

RESIDUAL IMPACTS

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

6.11.3 TRAFFIC

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

MITIGATION MEASURES

The following mitigation measure will be implemented.

- Nighttime driving of project vehicles will be limited where possible.
- Vehicles will remain confined to defined access.
- The rote of the vehicles will be defined and given to drivers and security system.
- The road will be labeled according to the rules and regulations.
- Speed limits will be maintained.
- The timetable and schedule of the vehicles will be defined and the monitoring of vehicles will be done every time.
- Road signage relevant to the project traffic will be placed, where necessary.
- Community complaint register and other means will be adopted for the community to complain about non-adherence of traffic to speed limits, safe driving and other safety related concerns.
- All vehicle drivers will be trained in community safety aspects. Drivers will be trained in responsible and safe driving practices; safe speed limits for vehicles will be followed.

6.11.4 SOLID WASTE

Solid waste generated will be generated from batch making process, empty packets, bottles and raps of chemical from ETP (solid sludge), organic and domestic solid waste from admin block will produce. Most of the generated waste will be recyclable. The generated domestic solid waste will be handled as per area practices. If the waste management is not carried out properly, it can affect health of workers, pollution of soil, surface or ground water. All waste generated from the project will be managed by

proposed controls. The environmental impacts will be minimized after the implementation of the proposed mitigations. All process waste will be handed over to certified contractor.

MITIGATION MEASURES

The following mitigation measures will be implemented:

GENERAL WASTE MANAGEMENT PRACTICES

During operational phase of the project, a proper waste management plan will be devised and implemented. Key elements of the waste management system will include the following:

ON-SITE HANDLING

- There will be separated bins for segregation of different type of waste
- Proper waste collection system will be ensured. For this purpose, waste bins are placed inside the boundary.
- The recyclable waste will be sent to waste contractors.
- The sludge of from the ETP plant will salad out to waste companies.
- Waste from process will be sold to EPA certified contractor.
- The site in charge will ensure the separation of waste at production line.
- Proper person will be haired for the collection and removal of waste from the site.
- Records of generated waste should be maintained.
- All non-hazardous waste that can be recycled or reused will be handed over to the contractors.

OTHER MANAGEMENT MEASURES

- Training will be provided to personnel for identification, segregation and management of waste.
- All containers of waste will be labeled properly.

- All the container should be caped clean, making sure no Oster will produce in it.
- The proper waste management system will be applied.
- Small bins and large containers will be provided on every waste producing site at defined place causing no risk to worker and machinery.
- In-house audits of the waste management will be undertaken on regular basis.

RESIDUAL IMPACTS

Proper implementation of the mitigation measures will minimize the residual impact from waste. Monitoring and inspection will be undertaken to ensure the implementation of mitigation measures.

6.11.5 WASTEWATER

Wastewater will be produced from process and domestic uses. The wastewater may include different type of chemicals.

Mitigation Measures

- For treatment of wastewater, effluent treatment plant will be installed which is the part of the extension.
- The capacity of treatment plant will be 100 m^3/ day.
- Priority parameters will be tested on monthly basis and all parameters on quarter basis.
- Wastewater will be disposed off in Kot Mela Ram Drain, the management has obtained approval.
- The operational maintenance of ETP will be monitored on daily basis.
- Wastewater after treatment will also be used for horticulture purposes.

RESIDUAL IMPACTS

Implementation of the proposed mitigation measures and regular monitoring is not likely to leave any significant impact of the waste water from the unit.

6.11.6 ABNORMAL CONDITIONS

Abnormal events might include loss of power and diesters. The unit will have its own backup power supply using diesel generator to protect against a loss of power. This site is fare from river so no changes of flood. As the project will be constructed above to the ground and high liniment so when the heavy rain occur the water flow will stand on project site.

6.11.7 OCCUPATIONAL HEALTH AND SAFETY

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

MITIGATION MEASURES

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

- Proper training will be provided for the proper usage of machineries and personal protective equipment (PPE) will be provided. It will be ensured that the individual who has received the correct training is operating a particular machine.
- Site supervisor or health and safety should be present on site
- Risk Assessment will be done on daily basis
- Emergency response plans will be remained active.
- Monitoring cameras and sensors will be implanted at the work site
- OSHA polices will be implemented on site
- Regulation of the health and safety polices will be done on regular basis
- Regular housekeeping practices will be ensured by keeping the floor dry and during washing; proper protective equipment are being used. Restricted entry should be ensured during washing.
- Training of staff in the handling of lifting materials.

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

6.12 SOCIOECONOMIC IMPACTS

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

Table 6-4: Potential Socioeconomic impacts of the project

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

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

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

- Maximum number of unskilled and semi-skilled jobs will be reserved for the local communities.

6.12.1 EMPLOYMENT OPPORTUNITIES

The project is expected to have positive impact on economic condition of locals. Employment opportunities will be generated due to project activities.

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

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

6.13 POTENTIAL ENVIRONMENTAL ENHANCEMENT MEASURES

6.13.1 GREENBELT DEVELOPMENT

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

- Green belt helps in noise abatement for the surrounding area. Thus, it is recommended as noise barriers.
- Green belt will help to regulate the air quality
- Green belt also absolves extra heat help to maintain the change of enthalpy
- Green belt will provide natural refreshment to workers
- It will increase the ornamental beauty of the industry
- Green belt helps in achieving bio diversity by providing possible habitats for birds and animals.
- Green belts increase the aesthetic value of the site.

Pharmagen Limited(Pvt.) Ltd has already developed a greenbelt. Adequate number of small plants and trees are planted along the periphery of the unit and available open spaces.

CHAPTER 7

ENVIRONMENTAL MANAGEMENT PLAN

PHARMAGEN LIMITID

CHAPTER 7: ENVIRONMENTAL MANGEMENT AND MONITORING PLANS

7.1 GENERAL

This EIA provides the Environmental Management Plan (EMP) of the project to keep it environment benign as well as the monitoring plan to ensure the compliance of the established EMP.

Outline and key features of the EMP for construction and operations phase is presented in sub-sections below. As per the environmental legislation in Pakistan, the EMP for the operations phase, along with other documents, is to be submitted to the environmental protection agency to obtain confirmation for compliance and Environmental Approval for project operation. Even after implementation of the suggested mitigation measures, the impact may remain significant, and require regular monitoring. This section also underlies the monitoring framework for both construction and operation phases to check compliance of the EMP and to take timely actions for correction in case any accidence of significant criteria, requirements or goals are found.

7.2 OBJECTIVES OF ENVIRONMENTAL MANAGEMENT PLAN

The primary objectives of the EMP are to:

- Facilitate the implementation of the mitigation measures identified
- Define the responsibilities of the project proponent and contractor and provide a means of effective communication of environmental issues between them.
- Identify monitoring parameters in order to ensure the effectiveness of the mitigation measures
- Provide a mechanism for taking timely action in the face of unanticipated environmental situations.
- Identify training requirements at various levels.
- To apply the rules and regulation of the Punjab Environmental laws and international standards

- Making of environmental managemental polices
- Reviewing, regulating and improving of environmental policies on regular basis.

7.3 MANAGEMENT APPROACH

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

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

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

7.4 COMPONENTS OF THE EMP

THE EMP CONSISTS OF THE FOLLOWING:

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

7.5 ENVIRONMENT MANAGEMENT PLAN

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

Table 7-1: Environmental Management Plan

Objective	Management Action	Responsibility	Time framework	Residual impact
Construction phase				
Employment Opportunities				
To promote the employment of local persons	Recruitment of local workers will be undertaken without discrimination and in accordance with company recruitment policy by contractors involved in construction	Contractor	On commencement of construction activities	Unemployed people of area will get job opportunities and their standard of living improved
To promote the use of local service providers	Local procurement of goods and services will be undertaken wherever possible and cost effective and where practicable to the project	Contractor	On commencement of construction activities	Indirect job opportunities
Safety during construction				
To ensure safety on construction site	• Safety signage will be put in relevant places within the construction site	Contractor/Environmental	On commencement of	Safety of workers will be ensured by implementing

	• Site Health and Safety officer is present • Construction drivers are subjected to public safety awareness • Reckless driving by construction workers will be prohibited and monitored • Workers will be given PPEs such as; helmets, mask, ear-plugs/muffs, safety boots, etc. and its use will be strictly enforced • Workers will be trained on the regular basis regarding personal safety • Incidents will be reported directly to the concerned authority	manager/HSE manager	construction activities	proposed mitigation measures.
Construction waste management				

To prevent the contamination of soils and water resources due to inappropriate management and disposal of waste	• The construction site will have litter bins for waste collection • Recycling or reuse of waste wherever possible. • Application of a good strategy to collect, remove and safely dispose of waste on daily basis to ensure a clean environment in the factory site • Integrated waste management system will be adopted for the proper management of the waste at site • At the end of the construction phase, left-over waste will be removed by using the standard waste management procedures • All the idle machinery and equipment will be immediately removed from the site	Contractor	Throughout construction stage	Waste was disposed of/reused/ recycle or resale as per practices of area.

	• Scrap and the debris will be removed from the site at the end of the construction stage after appropriate segregation of the material • All the domestic waste produce by the worker will be given to the municipal waste management company			
Pollution control management				
To contain spillages	• Proper maintenance of construction vehicles and equipment will be undertaken • Appropriate environmental security measures including shovels and plastic bags etc will be provided to prevent accidental release to ground. • Appropriate procedures and protocols will be established and	Contractor	On-site establishment	Potential for accidental release of materials during transport and handling on the site should be minimized.

	monitored for materials transport and handling whilst on the site. • Emergency response plan will be developed for any incident.			
To manage sewage	Portable toilets will be provided at site.	Contractor	On commencement of construction	Portable toilets will be cleaned properly and regularly
Protection of biodiversity				
To avoid unnecessary disturbance of and quick recovery of biodiversity in the plant site	• Avoid destruction of biodiversity outside the designated factory construction site • Minimize clearing of vegetation during construction • Surface soil excavated during construction to be placed back on the sub-soil to fast vegetation recovery • Prepare and implement an appropriate landscaping	Contactor	Throughout construction phase	Although the land is industrial in nature but vegetation loss cannot be avoided, but successful restoration, improvement and long-term management of the surrounding areas and maintenance of planted trees will be provided

	programme to help in re-vegetation of affected project areas after construction • The flora of the site will be restored at the end of the construction phase by landscaping and planting native vegetation • Defining the route for vehicles and machinery transport, defining the work area, the pathway for the worker area will also be defined and policy will form for the minimum use of outer land during construction.			
Air quality & dust management				
To minimize the dust entrainment during construction	• Regular surface wetting will be implemented on dusty sections in the factory construction site • Strict on-site speed controls will be enforced for construction vehicles	Contractor	On commencement of construction activities	Dust propagation will be limited to construction area and will not influence local community. However, workers were supplied with

	• All trucks hauling soil, sand and other loose materials will be covered • No excavation activity will be carried out during windy days • The watering of the route will be done on regular basis • Specified routes will also help to overcome the dust to evolve. • Fuel-efficient and well-maintained haulage trucks will be employed to minimize exhaust emissions • Construction workers will be sensitized on measures to reduce air pollution			dust masks especially on dry days.
Noise				

To minimize disturbance due to noise	• Loading and unloading of materials will be done carefully to reduce noise disturbances to surrounding households • Residences are at a safe distance from site so no disturbance will be envisaged. • Drivers will be instructed to avoid unnecessary gunning of vehicles, hooting and buzzing. • Regular maintenance of the machinery will be done to reduce the noise • Vehicles will be tuned on regular basis • The inspection of the vehicles will be done by health and safety officer on regular interval	Contractor	On commencement of construction activities	within PEQs
Occupational health & safety				

To ensure healthy and Secure/safe environment in the construction site for all workers	• Management will ensure that fire extinguishers should be located in strategic and visible places • Health and Safety data sheet will be design and formed by Safety officer. • All vehicles and construction equipment will be under control of competent personnel • Inspection of material and harmonization to the occupational health and safety standards. • Adequate security for workers will be provided during construction • Sensitize workers to operate in teams	Contractor	Throughout construction phase	Record of all incidents will be maintained and reported to HSE manager.
Operation phase				
Wastewater management				

Degradation of surface waters quality due to process water and sewage direct disposal	• For treatment of wastewater, effluent treatment plant will be installed which is the part of the extension. • The capacity of treatment plant will be 100 m^3/ day. • Priority parameters will be tested on monthly basis and all parameters on quarter basis. • Wastewater will be disposed off in Kot Mela Ram Drain, the management has obtained approval. • The operational maintenance of ETP will be monitored on daily basis. • After treatment the wastewater will also be used for horticulture activities.	Pharmagen Limited(Pvt.) Ltd	Throughout project life cycle	None

Air quality management				
Particulate emissions and stack emissions	• Emissions from boiler are controlled by equipping with cyclone, scrubber and room • Emissions from the admin block and warehouse also pass through the ventilation system including filters • Power Engines will be equipped with air emission control technology. • Monitoring of Ambient air parameters (Particulate matter, SOx, NOx) emissions should be carried out on regular basis to ensure compliance with the PEQS. • The inspection and the maintenance of the boiler and generator will be done on regular basis. • Plantation of indigenous trees within the premises and along the boundary.	Pharmagen Limited(Pvt.) Ltd	Throughout operation phase	Local air quality will be virtually unaffected and will be based on PEQs

	• Biomass as fuel will be used in boiler.			
Noise & vibration				
To minimize disturbance of communities due to noise	• All the machinery will be installed and operated in a closed hall and from operation of machinery noise will not be a problem for the residents in the area nearby. Further Administration of the unit will take the precautionary measures to avoid the noise emissions. There is no possibility of Noise pollution • A thick greenbelt will be developed all around the plant which will be acting as noise barrier. • Introduction of control and monitoring rooms having good sound insulation properties. • All the workers will be provided with ear plugs. • Latest technology will be implanted which has low level of noise. The boiler and power house (closed	Pharmagen Limited(Pvt.) Ltd	Throughout project life cycle	Noise level will be based on PEQs

	system) will be planted away from the admin and the work area.			
Traffic & transport				
Increased heavy vehicles traffic both locally and nationally.	• Maximize the use of the rail network, when available, for bulk deliveries and abnormal loads. Restricting delivery hours to reduce noise nuisance; avoid heavy truck movements in the night hours will be considered whether deliveries should be scheduled to avoid peak times to reduce congestion • Routes for the transport and speed limits will be defined for vehicles and machinery	Management of Pharmagen Limited(Pvt.) Ltd	Throughout project operation	The traffic has the potential to contribute to congestion and lead to complaints due to noise/vibration nuisance on a local basis. However, the study indicates that there will not be a significant impact.
HSE				

To minimize loss work injury/hazards/incidents/accidents	• Training regarding HSE should be given on the regular basis • Workers will be given PPEs such as; helmets, mask, ear-plugs/muffs, safety boots, etc. • Risk assessment will be done on daily basis by HSE officer • Permits and safety data sheets will be filled on regular basis and record will be maintained • It should be strictly enforced to wear PPEs while working • Workers will be trained on the regular basis regarding personal safety and disaster management • Incidents should be reported directly to the concerned authority	Environmental manager/HSE of Pharmagen Limited(Pvt.) Ltd	Throughout life cycle of project	Potential of injuries will be minimized
First aid				

To ensure safety and health	• First aid box will be available at the site • First aid training will be given to the employees on the regular basis • Numbers of all the concerned/authorized persons that will be contacted in the case of emergency will be displayed on-site	Environmental manager/HSE of Pharmagen Limited(Pvt.) Ltd	Throughout life cycle of project	None
Fire hazard				
To prevent any disaster	• Firefighting equipment including DCP type fire extinguisher, CO2 Type extinguisher, sand buckets, sand drums with spade and hose pipe cabinet will be installed inside the plant • All the equipment will be placed at strategic locations where the risk of	Environmental manager/HSE	Throughout life cycle of project	Potential of disaster will be minimized by suggested mitigation measures implementation

	out-burst of the fire is high. List of fire posts is annexed. • Smoking will not be permitted in the vicinity of the plant • Regular site inspection will be done to eliminate all the chances of the hazards • Checking and maintenance of the fire-fighting equipment will be carried out on the regular basis ✓ Emergency evacuation plan is annexed.			
Employment				
To provide job opportunities and helping in improving living standard of people	• During this phase, skilled and unskilled labour will be required. • Employment opportunities for the un-skilled workers will therefore increase which will enhance the positive benefits for the local	Pharmagen Limited(Pvt.) Ltd	During construction and operation phase	Direct and indirect jobs

	people who are in dire need of income for sustenance. ✓ Indirect opportunities for employment will arise from the provision of services to the construction teams, such as sale of raw-material such as cement, bricks, sand etc., as well as food and beverages for the labour and after completion of construction phase serve as a permanent business opportunity.			

7.6 ENVIRONMENTAL MONITORING PLAN

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

Table 7-2: Environmental Monitoring Plan

Env. Components	Project Stage	Parameters	Instrument	Standards	Monitoring			Institutional Responsibility
					Location	Frequency	Duration	
Air	Construction	PM_{10}, SO_2, NO_2, CO, SPM ,O_3	Air Quality Monitors/Gadgets	PEQS	Project site	Twice during construction	As per approved testing method	Contractor through approved monitoring lab
	Operation	Stack emissions	Air Quality Monitors/Gadgets	PEQs	stack	Quarterly	As per approved testing method	Through approved third party/monitoring lab

Noise Levels	Construction	Noise levels on dB(A) scale	Digital Sound Meter	PEQs	Project site	Twice during construction	Reading to be taken at 15 seconds interval for 15 minutes every hour and then averaged	Contractor through approved monitoring lab
	Operation	Noise levels on dB(A) scale	Digital Sound Meter	PEQs	Project site	Quarterly	Reading to be taken at 15 seconds interval for 15 minutes every hour and then averaged	Through approved third party/monitoring lab
Wastewater	Operation	BOD, COD, TSS etc	Through approved equipments	PEQs	ETP	Monthly	As per approved testing method	Through approved third party/monitoring lab

7.7 INSTITUTIONAL CAPACITY OF THE UNIT

The organizational structure for the Environment Management Plan is outlined below:

7.7.1 Primary Responsibilities

The primary responsibility for implementing different aspects of the EMP within the company lies with the concerned departments of Pharmagen Limited(Pvt.) Ltd.

7.7.2 Operation Management & Control

Conducting the operational activities in environmentally sound manner will be the responsibility of the concerned Manager; for which he will be trained.

7.7.3 Supervision & Monitoring

Senior Supervisor will be responsible for all environmental issues and for the implementation of EMP.

7.7.4 Communications & Documentation

An effective mechanism to store and communicate environmental information during the project is an essential requirement of an EMP.

7.7.4.1 Meetings

As environment is multidisciplinary subject with environmentalist having a dynamic role therefore In-charge environment would be considered as integral part in both constructional and operational team. Participation of Environmental in-charge in daily morning meeting and any other special meeting is mandatory. Besides internal meeting HSE in-charge/Environment in-charge is also responsible to conduct meeting with local in keeping administration in liaison.

7.7.4.2 Changes-Record Register

A change-record register will be maintained at the site, in order to document any changes in project design. These changes will be handled through the change management mechanism.

7.8 ENVIRONMENTAL TRAINING

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.

Table 7-3: Training Program

Target audience	Trainers	Contents	Schedule
Selected management staff	Contractors	Key finding of mitigation measure	After every five months
All personnel	HSE Officer	Mitigation measures	Monthly
Technical Staff	HSE Officer	Waste disposal or sale out status, vehicle movement restriction and other mitigation measures	After every three month
Other staff	HSE Officer	Waste disposal, resource conservation and other mitigation workers	Monthly

7.9 EQUIPMENT MAINTENANCE DETAILS

The project is about pharma industry namely "Pharmagen Limited(Pvt.) Ltd". Machines in said unit will be maintained on the regular basis. Following is the maintenance details for the machines and equipments:

Task	Weekly	Monthly	Semi-Annually	Annually
Visual Inspection	✓			
Testing and Inspection		✓		
Maintenance of Machines				
Fire Mains and Nozzles				
Containers/Cylinders				
Control and Section Valves				

7.10 ENVIRONMENTAL BUDGET

Approximately PKR 50 million budget will be reserved for tree plantation, solid waste management, wastewater management and environmental monitoring. Monitoring tests for ambient air quality, noise and groundwater quality will also be conducted.

CHAPTER 8

CONCLUSION AND RECOMMENDATIONS

CHAPTER 8: CONCLUSION AND RECOMMENDATIONS

8.1 CONCLUSION

The report presents Environmental Impact Assessment (EIA) of the said unit. EIA of said Project is performed according to guidelines of EPA. It includes description of the project, description of the environmental baselines, potential environmental impacts and suggested mitigation measures. An implementation mechanism for mitigation measures in the form of an Environmental Management Plan is included in the study.

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

Based on overall assessment of the environmental impact of the project, it is concluded that the economic benefit from the project is not at the cost of environment. From the historical records and vast experience in sustainable development keeping environment as integral part of manufacturing system, Pharmagen Limited is worthy of Environmental approval. Further the project is not likely to cause any significant adverse impact on the physical and biological environment but positive impact on social development and economic prosperity of the area, provided that suitable mitigation measures as identified in this study are implemented.

It is accordingly recommended that Environmental Approval for the project may be issued by the Punjab Environmental Protection Agency, subject to payment of the requisite scrutiny fee by the proponent of the project.

8.2 RECOMMENDATIONS

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

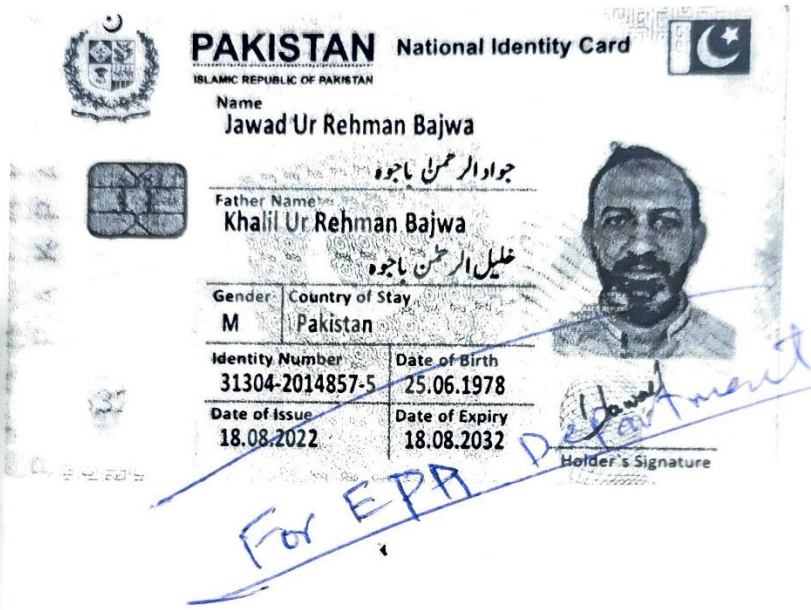
- Implementation of EMP must be given top priority.
- Proper PPEs including ear plugs, ear muffs, mufflers, goggles, gloves and shoes etc. should be provided to workers
- Train workers to use PPEs
- Advise workers to follow SOPs.
- Equipment maintenance and efficiency must be checked.
- No compromise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

- The construction and installation should be completed in guidelines of accorded Environmental Approval.

ANNEXURE I

PROPONENT CNIC

PHARMAGEN LIMITID



PAKISTAN National Identity Card

ISLAMIC REPUBLIC OF PAKISTAN

Name
Jawad Ur Rehman Bajwa

جواد الرحمن باجوہ

Father Name
Khalil Ur Rehman Bajwa

خلیل الرحمن باجوہ

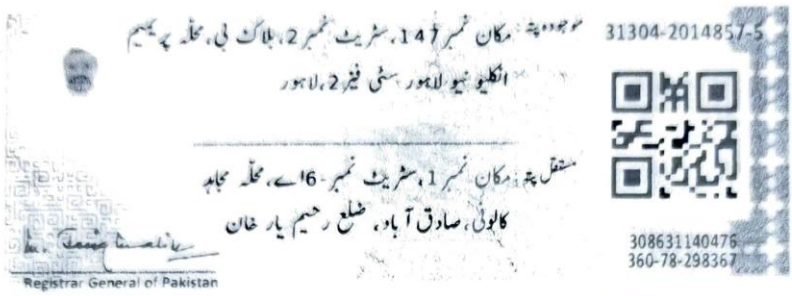
Gender	Country of Stay
M	Pakistan

Identity Number	Date of Birth
31304-2014857-5	25.06.1978

Date of Issue	Date of Expiry
18.08.2022	18.08.2032

Holder's Signature

For EPA Department



موجودہ پتہ: مکان نمبر 147، سٹریٹ نمبر 2، بلاک بی، محلہ پیسیم
انکلیو نیو لاہور سٹی فیز 2، لاہور

مستقل پتہ: مکان نمبر 1، سٹریٹ نمبر 16اے، محلہ مجاہد
کالونی، صادق آباد، ضلع رحیم یار خان

31304-2014857-5

308631140476
360-78-298367

Registrar General of Pakistan

For EPA Department

گمشدہ کارڈ ملنے پر قریبی لیٹر بکس میں ڈال دیں

ANNEXURE II

PROPERTY DOCUMENTS

PHARMAGEN LIMITID

نقل رجسٹر حقداران زمین (مسل میعادی)

موضع کوٹ نبی بخش والا | طرف/پتی | نمبر حد بست | تحصیل ماڈل ٹاؤن | ضلع لاہور | سال 2019-20 | کتاب نمبر | ورق نمبر 6 / 1

۱	۲	۳ (الف)	۳ (ج)	۳ (د)	۳ (ہ)	۳ (و)	۴	۵	۶	۷	۸	۹	۱۰
نمبر کھیوٹ	نمبر کھتونی کاشتکار	کوائف مالک: نام مالک معہ نام والد/خاوند قوم اور سکونت	نوعیت حقوق مالک راہن مرتہن	مشترکہ کھاتہ میں مخصوص حصہ	مخصوص رقبہ مطابق حصہ	زرعی پاس بک نمبر	نام کاشتکار معہ احوال	نمبر خسرہ معہ نام اگر کوئی ہو	رقبہ وقسم زمین کھیوٹ دار اور میزان کھتونی کاشتکار و کھیوٹ مالک	وسائل آبپاشی معہ نام چاہ راجباہ وغیرہ	لگان جو کاشتکار ادا کرتا ہے شرح اور مطالبہ	مطالبہ معہ تفصیلات مالیہ وجبوب	کیفیت معہ 1- نام نمبردار (اگر کوئی ہو) 2- شرح مالیہ زمین
33	148	میسرز قارا جن ٹیکسٹائل لمیٹڈ بذریعہ پرویز ایم صوفی چیف ایگزیکٹو ولد گلبرگ لاہور E-6 قوم (ب) قومی شناختی کارڈ نمبر	مالک	1/1 حصہ منتقلہ 1/1	25-14-0 رقبہ منتقلہ 25-14-0		باقی بدستور	قطعات 3	سالم کھاتہ 25-14-0 پچیس کنال چودہ مرلے				بحوالہ انتقال نمبر 563 منجانب میسرز قارا جن پرائیویٹ لمیٹڈ بذریعہ پرویز ایچ صوفی بحق فیصل بینک لمیٹڈ میں بلیو اور گلبرگ لاہور بالعوض مبلغ/100000 1 اور میں آڑرین ہو چکا ہے نمبر انتقال 464 قسم انتقال بیع تاریخ فیصلہ 07/10/30 نمبر انتقال 563 قسم انتقال آڑرین تاریخ فیصلہ 11/9/14
		میزان		1/1	25-14-0								
							میزان کھیوٹ	قطعات 3	25-14-0 پچیس کنال چودہ مرلے	قسم زمین نہری 25-14-0			

نقل مطابق اصل ہے | نام درخواست کنندہ: خالد علی ولد محمد اسلم | راجپوت کھوکھر | 3520186919545

فرد برائے ذاتی ریکارڈ | قوم | شناختی کارڈ نمبر

نام اجراء کنندہ | تاریخ فرد پرنٹنگ | تاریخ فرد اجراء

PUNJAB LAND RECORDS AUTHORITY SERVICE CENTRE OFFICIAL
12/07/2021 14:39
Model Town Lahore
12/07/2021 14:27

کمپیوٹرائزڈ نقل۔ دستخط کی ضرورت نہیں ہے۔
اراضی ریکارڈ سنٹر لاہور ماڈل ٹاؤن
سروس سنٹر فیس 650.00

00-000-000-000-0014925142

نقل رجسٹر حقداران زمین (مسل میعادی)

محال کوٹ نبی بخش والا | طرف / پتی ندارد | تحصیل ماڈل ٹاؤن | ضلع لاہور | سال 2019-20 | کتاب نمبر | ورق نمبر 6 / 2

۱	۲	۳ (الف)	۳ (ج)	۳ (د)	۳ (ہ)	۳ (و)	۴	۵	۶	۷	۸	۹	۱۰
نمبر کھیوٹ مالک	نمبر کھتونی کاشتکار	کوائف مالک: نام مالک معہ نام والد / خاوند قوم اور سکونت	کوائف مالک: نوعیت حقوق مالک راہن مرتہن	کوائف مالک: مشترکہ کھاتہ میں مخصوص حصہ	کوائف مالک: مخصوص رقبہ مطابق حصہ	کوائف مالک: زرعی پاس بک نمبر	نام کاشتکار معہ احوال	نمبر خسرہ معہ نام اگر کوئی ہو	رقبہ و قسم زمین کھیت دار اور میزان کھتونی کاشتکار و کھیوٹ مالک	وسائل آبپاشی معہ نام چاہ/راجباہ وغیرہ	لگان جو کاشتکار ادا کرتا ہے شرح اور مطالبہ	مطالبہ معہ تفصیلات مالیہ و حبیب	کیفیت معہ 1- نام نمبردار) اگر کوئی ہو(2- شرح مالیہ زمین
54	149 تا 150	میسرز قادر ماجن بیکو کو لمیٹڈ بذریعہ ندیم شفیق اللہ چیف ایگزیکٹو ولد قوم ساکنہ یہ ۳(ب) قومی شناختی کارڈ نمبر	مالک	1/1 = حصہ مشترکہ 1/1	164-1-0 رقبہ مشترکہ 164-1-0		باقی بدستور	قطعات 33	سالم کھاتہ 157-8-0 ایک سو ستاون کنال آٹھ مرلہ				بحوالہ انتقال نمبر 377 رقبہ تعداد کی 163-18-0 بنجانب میسرز قادر ماجن بیکو کو لمیٹڈ بذریعہ پروپرائٹر حسین چیف ایگزیکٹو، بحق پراہم کمرشل بنک لمیٹڈ گلبرگ لاہور آڈرین ہو چکا ہے۔ فرد بدر نمبر 10 بتاریخ فیصلہ 10/10/2016 فرد بدر نمبر 13 بتاریخ فیصلہ 2020/01/22
		میزان		1/1	164-1-0								
							میزان کھیوٹ	قطعات 33	157-8-0 ایک سو ستاون کنال آٹھ مرلہ	قسم زمین غیر ممکن راستہ 1-8-0 غیر ممکن قابل کاشت 51-11-0 نہری 104-9-0			

نقل مطابق اصل ہے

فرد برائے ذاتی ریکارڈ

نام درخواست کنندہ: خالہ علی ولد محمد اسلم

قوم: راجپوت کھوکھر

شناختی کارڈ نمبر: 3520186919545

نام اجراء کنندہ: محمد ارسل رسول ولد غلام رسول

تاریخ فرد پرنٹ: 12/07/2021 14:39

تاریخ فرد اجراء: 12/07/2021 14:27

کمپیوٹرائزڈ نقل۔ دستخط کی ضرورت نہیں ہے۔

اراضی ریکارڈ سنٹر: لاہور ماڈل ٹاؤن

سروس سنٹر فیس: 650.00

00-000-000-000-0014925142

نقل رجسٹر حقداران زمین (مسل میعادی)

نمبر/نام موضع: کوٹ نبی بخش والا | طرف/پتی: ندارد | تحصیل: ماڈل ٹاؤن | ضلع: لاہور | سال: 2019-20 | کتاب نمبر | ورق نمبر: 6 / 3

۱	۲	۳ (الف)	۳ (ج)	۳ (د)	۳ (ہ)	۳ (و)	۴	۵	۶	۷	۸	۹	۱۰
نمبر کھیوٹ مالک	نمبر کھتونی کاشتکار	کوائف مالک: نام مالک معہ نام والد/خاوند قوم اور سکونت	نوعیت حقوق مالک راہن مرتہن	مشترکہ کھاتہ میں مخصوص حصہ	مخصوص رقبہ مطابق حصہ	زرعی پاس بک نمبر	نام کاشتکار معہ احوال	نمبر خسرہ معہ نام اگر کوئی ہو	رقبہ و قسم زمین کھیوٹ وار اور میزان کھتونی کاشتکار و کھیوٹ مالک	وسائل آبپاشی معہ نام چاہ و راجباہ وغیرہ	لگان جو کاشتکار ادا کرتا ہے شرح اور مطالبہ	مطالبہ معہ تفصیلات مالیہ و حبوب	کیفیت معہ 1- نام نمبردار (اگر کوئی ہو) 2- شرح مالیہ زمین
15	36 تا 39	میسرز فارما جن۔ یکسی کو لمیٹڈ بذریعہ پرویز ایم صوفی چیف ایگزیکٹو ولد گلبرگ لاہور E-6 قوم	مالک راہن	54000/466650	12-0-0		باقی بدستور	تعداد 17	سالم کھاتہ 103-14-0 ایک سو تین کنال چودہ مرلے				نمبر انتقال 425 قسم انتقال تک آؤر ہن تاریخ فیصلہ 4-5-06
		۳(ب) قومی شناختی کارڈ نمبر		حصہ منتقلہ 120/1037	رقبہ منتقلہ 12-0-0								نمبر انتقال 485 قسم انتقال بیعہ تاریخ فیصلہ 8-10-09
		باقی بدستور میزان		917/1037 120/1037	12-0-0								نمبر انتقال 563 قسم انتقال آؤر ہن تاریخ فیصلہ 14-9-11
													نمبر انتقال 401 قسم انتقال بیعہ تاریخ فیصلہ 05-8-9
													غلام مصطفیٰ نمبردار
													نمبر انتقال 123 قسم انتقال بیع تاریخ فیصلہ 16/07/2016
													نمبر انتقال 133 قسم انتقال بیع تاریخ فیصلہ 15/12/2016

نقل مطابق اصل ہے

نام درخواست کنندہ: خالد علی ولد محمد اسلم

فرد برائے ذاتی ریکارڈ قوم: راجپوت کھوکھر

شناختی کارڈ نمبر: 3520186919545

نام اجراء کنندہ: محمد ارسل رسول ولد غلام رسول

تاریخ فرد پرنٹنگ: 12/07/2021 14:39

تاریخ فرد اجراء: 12/07/2021 14:27

کمپیوٹرائزڈ نقل۔ دستخط کی ضرورت نہیں ہے۔

اراضی ریکارڈ سنٹر: لاہور ماڈل ٹاؤن

سروس سنٹر فیس: 650.00

00-000-000-000-0014925142

نقل رجسٹر حقداران زمین (مسل میعادی)

ورق نمبر 6 / 4 | کتاب نمبر | سال 2019-20 | ضلع لاہور | تحصیل ماڈل ٹاؤن | طرف / پتی ندارد | موضع کوٹ نبی بخش والا

۱	۲	۳ (الف)	۳ (ج)	۳ (د)	۳ (ہ)	۳ (و)	۴	۵	۶	۷	۸	۹	۱۰
ہر کھیوٹ نمبر مالک	نمبر کھتونی کاشتکار	کوائف مالک: نام مالک معہ ولدیت قوم اور سکونت	نوعیت حقوق مالک راہن مرتہن	مشترکہ کھاتہ میں خصوصی حصہ	مخصوص مرقبہ مطابق حصہ	زرعی پاس بک نمبر	نام کاشتکار معہ احوال	نمبر خسرہ معہ نام اگر کوئی ہو	رقبہ و قسم زمین کھیت وار اور میزان کھتونی کاشتکار و کھیوٹ مالک	وسائل آبپاشی معہ نام چاہ و راجباہ وغیرہ	لگان جو کاشتکار ادا کرتا ہے شرح اور مطالبہ	مطالبہ معہ تفصیلات مالیہ و جیب	کیفیت معہ 1- نام نمبردار) اگر کوئی ہو(2- شرح مالیہ زمین
15 مذکور	36 تا 39 مذکور												نمبر انتقال 203 قسم انتقال بیع رجسٹری تاریخ فیصلہ 2020/02/08
							میزان کھیوٹ	قطعات 17	103-14-0 ایک سو تین کنال چودہ مرلے	قسم زمین نہری 103-14-0			

نقل مطابق اصل ہے | نام درخواست کنندہ: خالد علی ولد محمد اسلم | ہم اجراء کنندہ: محمد ارسل رسول ولد غلام رسول | کمپیوٹرائزڈ نقل۔ دستخط کی ضرورت نہیں ہے۔ | 00-000-000-000-0014925142

فردبرائے ذاتی ریکارڈ | قوم: راجپوت کھوکھر | تاریخ فرد پرنٹنگ: 12/07/2021 14:39 | اراضی ریکارڈ سنٹر: لاہور ماڈل ٹاؤن

شناختی کارڈ نمبر: 3520186919545 | تاریخ فرد اجراء: 12/07/2021 14:27 | سروس سنٹر فیس: 650.00

نقل رجسٹر حقداران زمین (مسل میعادی)

موجل کوٹ نبی بخش والا | طرف/پتی ندارد | تحصیل ماڈل ٹاؤن | ضلع لاہور | سال 2019-20 | کتاب نمبر | ورق نمبر 6 / 5

۱	۲	۳ (الف)	۳ (ج)	۳ (ب)	۳ (ہ)	۳ (و)	۴	۵	۶	۷	۸	۹	۱۰
بہر کھیوٹ مالک	نمبر کھتونی کاشتکار	کوائف مالک: نام مالک معہ نام والد / خاوند قوم اور سکونت	نوعیت حقوق مالک راہن مرتہن	مشترکہ کھاتہ میں مخصوص حصہ	مخصوص رقبہ مطابق حصہ	زرعی پاس بک نمبر	نام کاشتکار معہ احوال	نمبر خسرہ معہ نام اگر کوئی ہو	رقبہ و قسم زمین کھیت وار اور میزان کھتونی کاشتکار و کھیوٹ مالک	وسائل آبپاشی معہ نام چادر راجباہ وغیرہ	انکان جو کاشتکار ادا کرتا ہے شرح اور مطالبہ	مطالبہ معہ تفصیلات مالیہ و حبوب	کیفیت معہ 1- نام نمبردار) اگر کوئی ہو) 2- شرح مالیہ زمین

نمبر کھیوٹ	مربع نمبر	خسرہ نمبران	خسرہ وبلیویشن	پیمائش	جگہ
15		1001. 126, 981	0		
15		1000, 1003	4,536,000	فی ایکڑ	آف روڈ
15		538, 539, 540, 541, 654, 655, 658, 659	5,000,000	فی ایکڑ	آف روڈ
15		518	7,904.000	فی ایکڑ	آف روڈ
15		104	2,900,000	فی کنال	آف روڈ
15		1000. 1003	4,200,000	فی ایکڑ	مین روڈ
15		932	4,536,000	فی ایکڑ	مین روڈ
15		127	5,000,000	فی ایکڑ	مین روڈ
53		124, 125	0		
53		106	2,900,000	فی کنال	آف روڈ
54		101, 129, 174, 177, 178. 179, 181, 182	0		
54		130, 166, 167, 183, 184, 186, 187, 190, 191. 192	5,000,000	فی ایکڑ	آف روڈ

نقل مطابق اصل ہے۔ | نام درخواست کنندہ خالد علی ولد محمد اسلم | نام اجراء کنندہ محمد ارسل رسول ولد غلام رسول | کمپیوٹرائزڈ نقل۔ دستخط کی ضرورت نہیں ہے۔ 00-000-000-000-0014925142

فرد برائے ذاتی ریکارڈ | قوم راجپوت کھوکھر | تاریخ فرد پرنٹنگ 12/07/2021 14:39 | اراضی ریکارڈ سنٹر لاہور ماڈل ٹاؤن

شناختی کارڈ نمبر 3520186919545 | تاریخ فرد اجراء 12/07/2021 14:27 | سروس سنٹر فیس 650.00

نقل رجسٹر حقداران زمین (مسل میعادی)

محال کوٹ نبی بخش والا | طرف / پتی ندارد | تحصیل ماڈل ٹاؤن | ضلع لاہور | سال 2019-20 | کتاب نمبر | ورق نمبر 6 / 6

۱	۲	۳ (الف)	۳ (ج)	۳ (د)	۳ (ہ)	۳ (و)	۴	۵	۶	۷	۸	۹	۱۰
رکھیت مالک	نمبر کھتونی کاشتکار	کوائف مالک: نام مالک معہ نام والد / خاوند قوم اور سکونت	نوعیت حقوق مالک راہن مرتہن	مشترکہ کھاتہ میں مخصوص حصہ	مخصوص رقبہ مطابق حصہ	زرعی پاس بک نمبر	نام کاشتکار معہ احوال	نمبر خسرہ معہ نام اگر کوئی ہو	رقبہ و قسم زمین کھیت وار اور میزان کھتونی کاشتکار و کھیوٹ مالک	وسائل آبپاشی معہ نام چاہ/راجباہ وغیرہ	ایجان جو کاشتکار ادا کرتا ہے شرح اور مطالبہ	مطالبہ معہ تفصیلات مالیہ و جیوب	کیفیت معہ 1- نام نمبردار) اگر کوئی ہو(2- شرح مالیہ زمین

نمبر کھیوٹ	مربع نمبر	خسرہ نمبران	خسرہ ولیویشن	پیمائش	جگہ
54		100, 102, 103, 99	2,900,000	فی کنال	آف روڈ
54		128, 149, 150, 151, 168, 180, 185, 188, 189, 193, 195	5,000,000	فی ایکڑ	مین روڈ

میزان کل رقبہ مستطہ 201-15-0 دوسو ایک کنال پندرہ مرلے

کل کھیوٹ خسرہ ولیویشن 151,034,837.00

نقل مطابق اصل ہے | نام درخواست کنندہ خالد علی ولد محمد اسلم

قوم راجپوت کھوکھر | فرد برائے ذاتی ریکارڈ

شناختی کارڈ نمبر 3520186919545

نام اجراء کنندہ

تاریخ فرد پرنٹنگ

تاریخ فرد اجراء

ان نمی ریکارڈ سنٹر لاہور ماڈل ٹاؤن

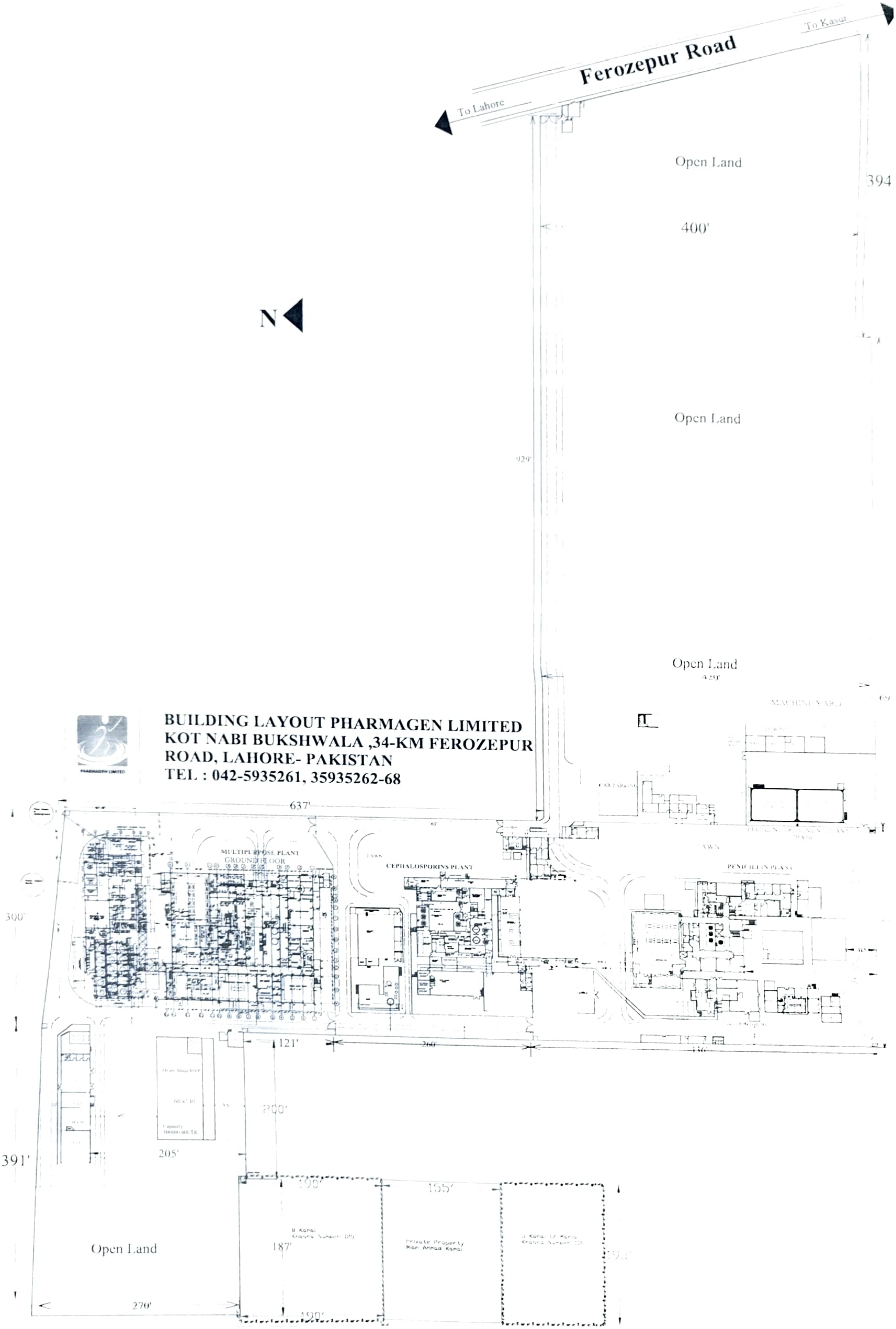
سروس سنٹر فیس 650.00

کمپیوٹرائزڈ نقل۔ دستخط کی ضرورت نہیں ہے۔

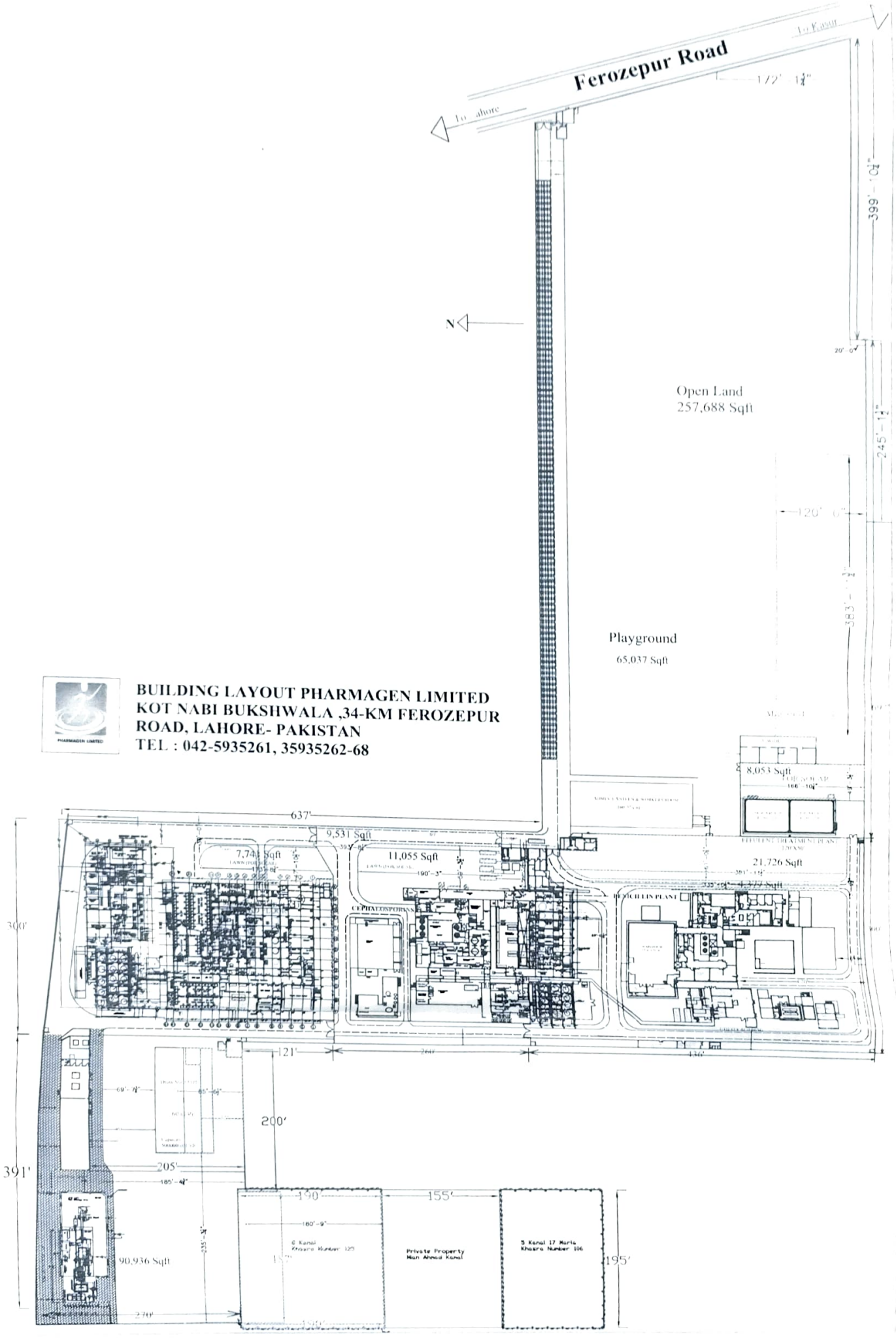
00-000-000-000-0014925142

ANNEXURE III

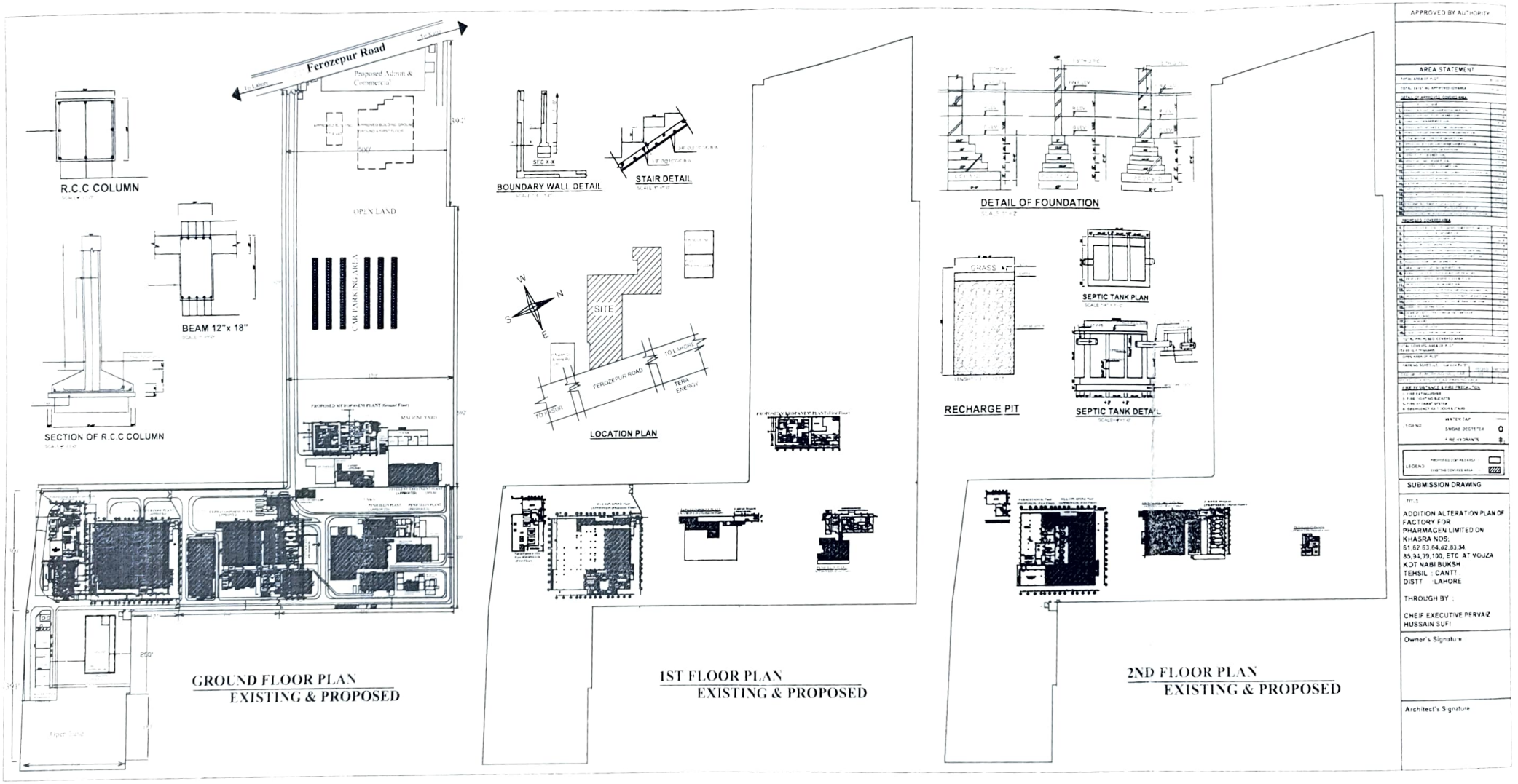
LAYOUT MAPS

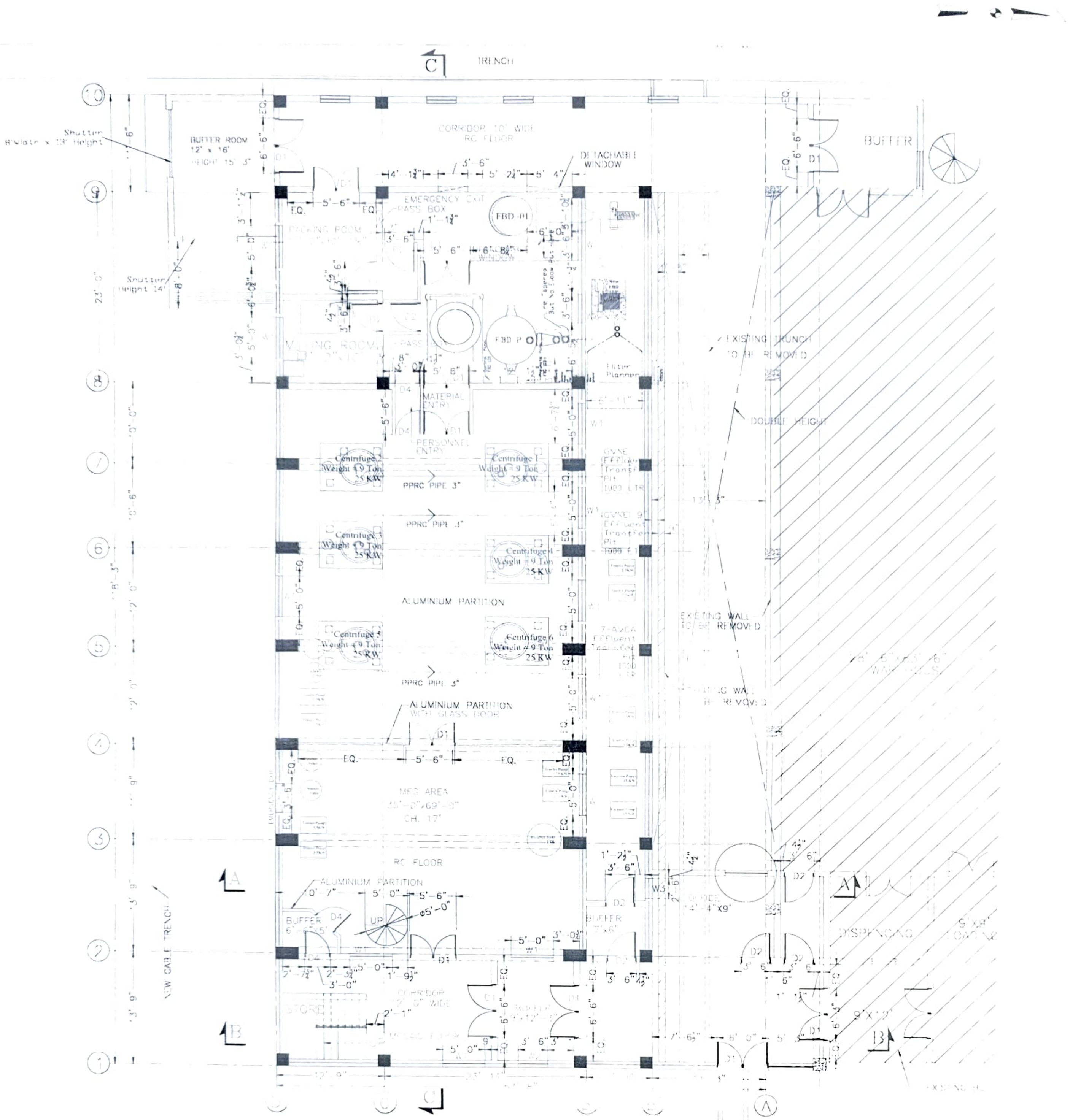


Ferozepur Road
To Lahore
To Kasur
Open Land
394
400'
N
Open Land
929'
Open Land
BUILDING LAYOUT PHARMAGEN LIMITED
KOT NABI BUKSHWALA ,34-KM FEROZEPUR
ROAD, LAHORE- PAKISTAN
TEL : 042-5935261, 35935262-68
637'
MULTIPURPOSE PLANT
GROUND FLOOR
CEPHALOSPORINS PLANT
PENICILLIN PLANT
300'
121'
260'
200'
205'
391'
190'
155'
187'
Private Property
Open Land
270'
190'



BUILDING LAYOUT PHARMAGEN LIMITED
KOT NABI BUKSHWALA ,34-KM FEROZEPUR ROAD, LAHORE- PAKISTAN
TEL : 042-5935261, 35935262-68


Ferozepur Road
Proposed Admin & Commercial
OPEN LAND
CAR PARKING AREA
R.C.C COLUMN
BEAM 12"x 18"
SECTION OF R.C.C COLUMN
BOUNDARY WALL DETAIL
STAIR DETAIL
SITE
FEROZEPUR ROAD
TOLL BOOTH
TERA ENERGY
LOCATION PLAN
DETAIL OF FOUNDATION
GRASS
RECHARGE PIT
SEPTIC TANK PLAN
SEPTIC TANK DETAIL
GROUND FLOOR PLAN
EXISTING & PROPOSED
1ST FLOOR PLAN
EXISTING & PROPOSED
2ND FLOOR PLAN
EXISTING & PROPOSED
APPROVED BY AUTHORITY
AREA STATEMENT
SUBMISSION DRAWING
ADDITION ALTERATION PLAN OF FACTORY FOR PHARMAGEN LIMITED ON KHASRA NOS. 61,62,63,64,82,83,84, 85,94,99,100, ETC AT MOUZA KOT NABI BUKSH TEHSIL : CANTT DISTT : LAHORE
THROUGH BY :
CHEIF EXECUTIVE PERVAIZ HUSSAIN SUFI
Owner's Signature
Architect's Signature



GROUND FLOOR PLAN

R.C.C. TRENCH COVERED WITH WATER TIGHT R.C.C. SLAB OPENABLE
SIZE: 2' 6" WIDE x 2' 0" DEEP

COVERED AREA = 5310 SFT.

0 2 4 6 10 15 20 FEET
SCALE 1/8" = 1'-0"
UNLESS OTHERWISE NOTED

rev	date	revision description	pre'd	chk'd	app'd
1	15.6.22	DOOR WINDOWS SCHEDULE REVISED			

reference documents

PHARMAGEN LIMITED

ZAVCA PLANT BUILDING INCLUDING TANK YARD & UTILITY AREA AT FACTORY BUILDING FOR PHARMAGEN PHARMACEUTICALS AT FEROZEPUR ROAD, LAHORE

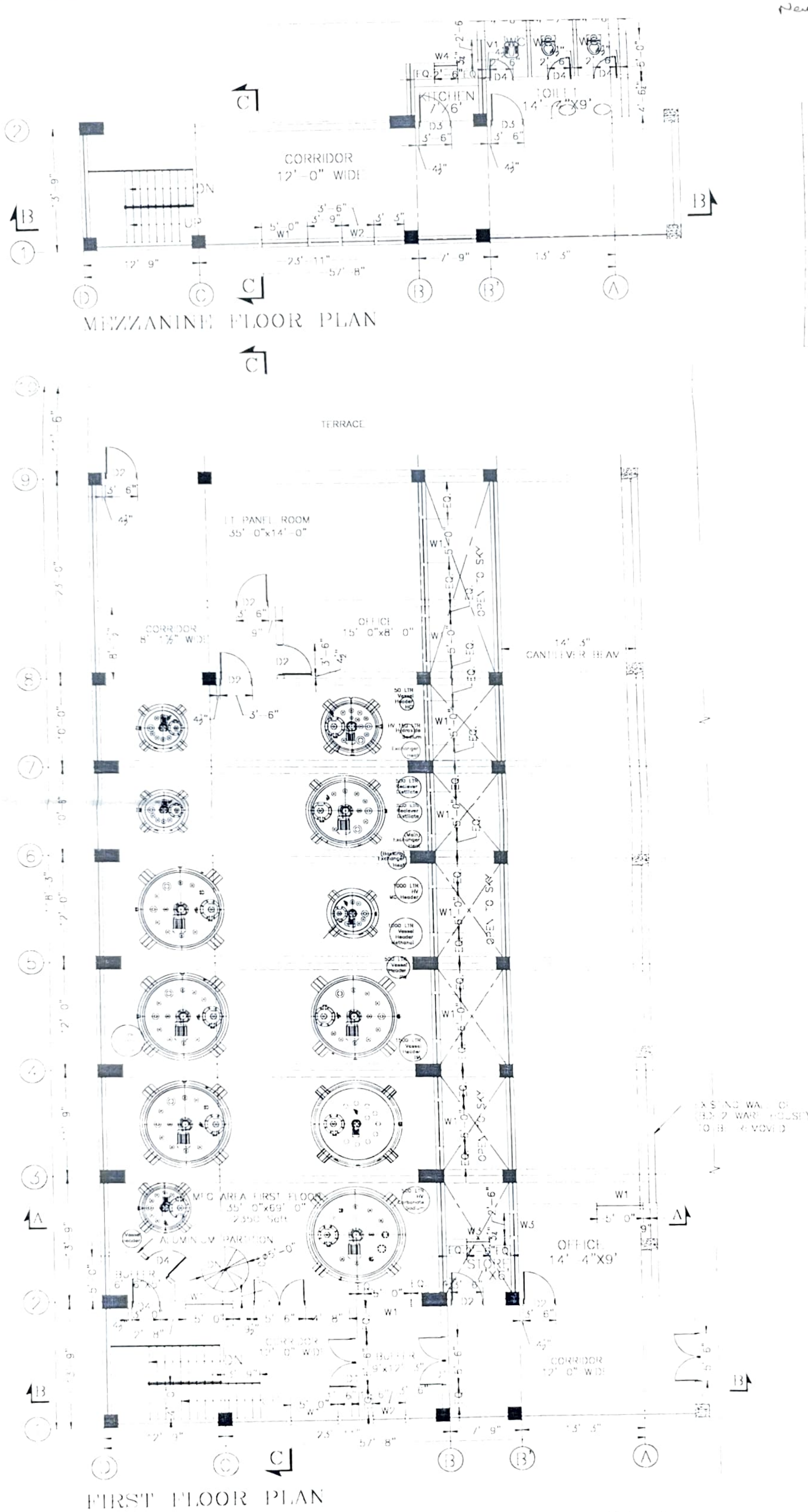
PLANT AREA

GROUND FLOOR PLAN

hike engineering consultants
consulting engineers & technical advisors
ph: (+92 42) 35457772-73 fax: (+92 42) 35457772
email: info@hikengg.com web: www.hikengg.com

project id: 1743
scale:
date: DEC. 2021
issued for:
drawn: HILAL
checked: AZAM
approved: MMY
sheet:
rev: 1

New -



DOORS/WINDOWS SCHEDULE

Sr	SIZE	SILL	DESCRIPTION
D1	6'-0"X7'-0"	0'-0"	GLASS DOOR
D2	3'-6"X7'-0"	0'-0"	GLASS DOOR
D3	3'-6"X7'-0"	0'-0"	STEEL DOOR
D4	2'-6"X7'-0"	0'-0"	STEEL DOOR
W1	5'-0"X5'-0"	2'-0"	FIXED GLASS
W2	3'-6"X5'-0"	2'-0"	FIXED GLASS
W3	2'-6"X5'-0"	2'-0"	FIXED GLASS
W4	2'-6"X3'-6"	3'-6"	FIXED GLASS
V1	4'-0"X4'-0"	8'-6"	FIXED GLASS
V2	3'-0"X4'-0"	8'-6"	FIXED GLASS

0 2 4 6 10 15 20

SCALE 1/8" = 1'-0"
UNLESS OTHERWISE [illegible]

PHARMAGEN [illegible]

ZAVCA PLANT BUILDING [illegible] & [illegible] AREA AT FACTORY [illegible] PHARMACEUTICALS [illegible]

PLAN [illegible]

MEZZANINE & [illegible]

reference documents

rev	date	revision description	pre'd	chk'd	app'd
1	15-6-22	DOOR WINDOWS SCHEDULE REVISED			

hike engineering consultants
consulting engineers & technical advisors
34-D, 6th Avenue, [illegible] Lahore, Pakistan
ph: (+92-42) 35457[illegible] fax: (+92-42) 35457[illegible]
email: info@[illegible] web: www.[illegible]

project no:	1743	drawing no:	hec/1743/A04
scale:	date: Dec, 2021	issued for:	
drawn: H.A.	checked: AZAV	approved: MMV	sheet:	rev:

ANNEXURE IV

GLOSSARY

GLOSSARY

Alternatives	The evaluation of alternatives to project development in EIA (timing, location, technologies etc) including the no go, or no development action.
Ambient	Relating to the immediate surroundings of something
Contamination	Pollution
Conservation	The preservation of natural resources for use by future generations
Consultation	A process of communication with those potentially affected by a project, policy, plan or program.
Effluent	means any material in solid, liquid or gaseous form or combination thereof being discharged from industrial activity or any other source and includes a slurry, suspension or vapor
EMP	An EMP is a site specific or project specific plan developed to ensure that appropriate environmental management practices are followed during a project's construction and operation.
Environment budget	Monitory assets reserve for environmental activity
Environment	means air, water and land; all layers of the atmosphere; all organic and inorganic matter and living organisms; the ecosystem and ecological relationships; buildings, structures, roads, facilities and works; all social and economic conditions affecting community life; and the inter-relationships between any of the factors mentioned
Environmental Audits	An environmental management tool consisting of a periodic and objective evaluation of an organization and installations to assess compliance with regulatory and other requirements, as defined by audit criteria
Environmental	means an environmental study comprising collection of

Impact Assessment	data, prediction of qualitative and quantitative impacts, comparison of alternatives, evaluation of preventive, mitigatory and compensatory measures, formulation of environmental management and training plans and monitoring arrangements, and framing of recommendations and such other components as may be prescribed
Extent/ Magnitude	The size or degree of the predicted impact
Fauna	Animal life occurring in particular region or time
Flora	plant life occurring in particular region or time
Geological	Relating to the study of the earth's physical structure and substance.
Impact	The consequence of an action or activity on the human or natural environment. Impacts may be positive, negative or neutral
Issue	A question or concern regarding an environmental impact, consequence or effect
Mitigation	Prescribed actions taken to prevent, avoid, reduce or minimize the impacts or potential adverse effects of a project
Monitoring	A combination of observation and measurement to assess the environmental and social performance of a project and its compliance with EIA/ EMP, or other approvals and regulatory conditions
Particulate Matter	A complex mixture of extremely small particles and liquid droplets that get into the air
Proponent	the person who intends to carry-out a proposed project
Sustainable development	Economic development that is conducted without depletion of natural resources.
Waste	means any material, substance, or by-product eliminated or discarded as no longer useful or required after the completion of a process

ANNEXURE V

ENVIRONMENTAL MONITORING REPORTS

PHARMAGEN LIMITID

ANNEXURE VI

TORs

PHARMAGEN LIMITID

TERMS OF REFERENCE FOR IEE

Title of Project	Extension of Pharmaceutical Products Manufacturing Unit, Construction of Admin Block & Installation of Biomass Boiler by M/S Pharmagen Limited
Title of Assignment	Preparation of Environmental Impact Assessment (EIA) Report
Proponent	Jawwad Ur Rehman Bajwa
Location of Project	34-Km Nabi Bakhush Wala, Ferozepur Road, District Lahore
Procurement Method	Formal Quotations

Project Description:

The proposed project is the Extension of Pharmaceutical Products Manufacturing Unit, Construction of Admin Block & Installation of Biomass Boiler by M/S Pharmagen Limited" at 34-Km Nabi Bakhush Wala, Ferozepur Road, District Lahore. The major purpose of this project is to increase the capacity of manufacturing unit of pharmaceutical products.

Objectives of Study:

- To assess and establish the existing environmental and socio-economic conditions of the area.
- To assess and establish the potential environmental and socio-economic impacts of the project activities and identify the issue of concern.
- To implement and execute environmental safeguards.
- To propose mitigation measures and monitoring arrangements that can be incorporated into the operation of the project to remove or reduce any damaging effects as far as possible.
- Categorization of the significant impacts requiring further consideration.
- To devise the Environmental Management Plan for the project.
- To prepare an EIA Report as per the relevant guidelines for submittal to EPA, Punjab.

Scope of Work for Consultants:

- Secondary Data Collection
- Field Survey and Primary Data Collection
- Baseline Monitoring
- Traffic Counts
- Socio-economic surveys (Interviews + Questionnaires)
- Compilation of Data

Client **Consultants**

PHARMAGEN LIMITED

- Preparation of EIA Report according to Regulation (6) or Review of IEE / EIA regulations, 2022 and Guidelines for Preparation and Review of Environmental Reports, 1997.
- Responding to any queries by EPA Punjab

Key Deliverables:

- 8 Hard Copies of IEE/EIA Report shall be filed as per Regulation (8) of Review of IEE / EIA Regulations, 2022
- 2 Soft Copies of IEE/EIA Report shall be submitted along with report as per Regulation (8) of Review of IEE / EIA Regulations, 2022
- IEE/EIA Report shall be accompanied by;
  - An application, in the form set out in Schedule IV of Review of IEE / EIA Regulations, 2022
  - An undertaking as per Schedule VII of Review of IEE / EIA Regulations, 2022
  - Copy of receipt showing payment of the review fee
- Reply of Query Letter (will be submitted if EPA require additional information)

Time Line:

- According to clause (a) of sub-regulation (1) of regulation 9, within ten working days of filing of EIA, EPA shall be responsible to confirm EIA is complete for purpose of initiation of review process
- According to clause (b) of sub-regulation (1) of regulation 9, EPA require such additional information as may be specified
- According to clause (c) of sub-regulation (1) of regulation 9, return EIA to proponent for revision, clearly listing the points requiring further study and discussion.
- According to sub-regulation (1) of regulation 11 of Review of IEE/EIA Regulations, 2022, EPA shall review IEE within forty five (45) days and EIA within ninety (90) days, of issue of conformation of completeness under clause (a) of sub-regulation (1) of regulation 9.
- According to Section 12 (4) of Punjab Environment Protection (Amendment) Act 2012, "The Government Agency shall communicate its approval or otherwise within a period of four months from the date the initial environmental examination of environmental impact assessment is filed complete in all respects in accordance with the prescribed procedure, failing which the initial environmental examination or, as the case may be, the environmental impact

Client **Consultants**

ARMAGEN LIMITED

assessment shall be deemed to have been approved to the extent to which it does not contravene the provisions of this Act and the rules and regulations."

Qualifications:

Personnel involved in the survey and preparation of EIA Report of the said project will have the following qualifications;

- BS/MS/M Phil Environmental Sciences
- BS/MS Environmental Engineering
- BS/MS Chemical Engineering

Responsibilities of Proponent:

- Responsible to pay all the dues of the consultants as per the agreed terms and conditions.
- According to regulation 7 of Review of IEE/EIA Regulations, 2022, proponent shall pay, at the time of submission of IEE/EIA, a non-refundable review fee to EPA, in accordance with rates specified in schedule III.
- Provide all documents / details required for completion of EIA Report
- Proponent shall be responsible for paying any fines / penalties levied by the EPA Punjab or Environment Tribunal
- Proponent shall be responsible for the validity and correctness of the information provided to the consultants

Client

PHARMAGEN LIMITED

Consultants

ANNEXURE VII

AUTHORITY LETTER IN FAVOR OF CONSULTANT

PHARMAGEN LIMITID

PHARMAGEN LIMITED
Factory: Kot Nabi Bukshwala,34 K.M.
Ferozepur Road, Lahore - Pakistan.
Tel: (+92-42) 35935261-66
Fax: (+92-42) 35935269
E-mail: pblbd@hotmail.com
Web: www.pharmagen.com.pk

Striving To Serve Humanity

Appointment & Authorization of Environmental Consultant

In the Provincial Environmental Protection Agency (EPA, Punjab) Lahore

In the matter of Project namely

"Extension of Pharmaceutical Products Manufacturing Unit, Construction of Admin Block & Installation of Biomass Boiler by M/S Pharmagen Limited"

To whom these presents shall come that the undersigned appoint

Address 34-Km Nabi Bakhush Wala, Ferozepur Road, District Lahore

To be the Environmental Consultants for conducting Initial Environment Examination (IEE) and to submit the IEE report, follow-up the same till the final decision: -

1. To conduct the IEE, prepare and submit.
2. To appear and represent the reply to the queries/objections, documents, explanations as shall be deemed necessary or advisable during the Review process of the above cause at all its stages till the final decision of EPA.
3. To withdraw, re-submit, revise the report or any act deemed necessary or advised in any manner relating to the said matter.
4. To prepare (if applicable) and submit the Review Fee instrument/Banker's cheque pay or receive moneys and obtain or grant receipts therefore and to do all other acts and things which may be necessary to be done for the progress in course of proceedings in the matter.
5. To appoint any Environmental Laboratory or other environmental expert authorizing him to conduct monitoring, surveys, data collection etc. whenever deemed fit to do so.
6. To present case before committee of experts and present public hearing.
7. **To receive all the letters and NOC from EPA Punjab on behalf of client.**

Dated: 09-04-2025

Jawwad Ur Rehman Bajwa
Proponent
Pharmagen Limited, Lahore

PHARMAGEN LIMITED

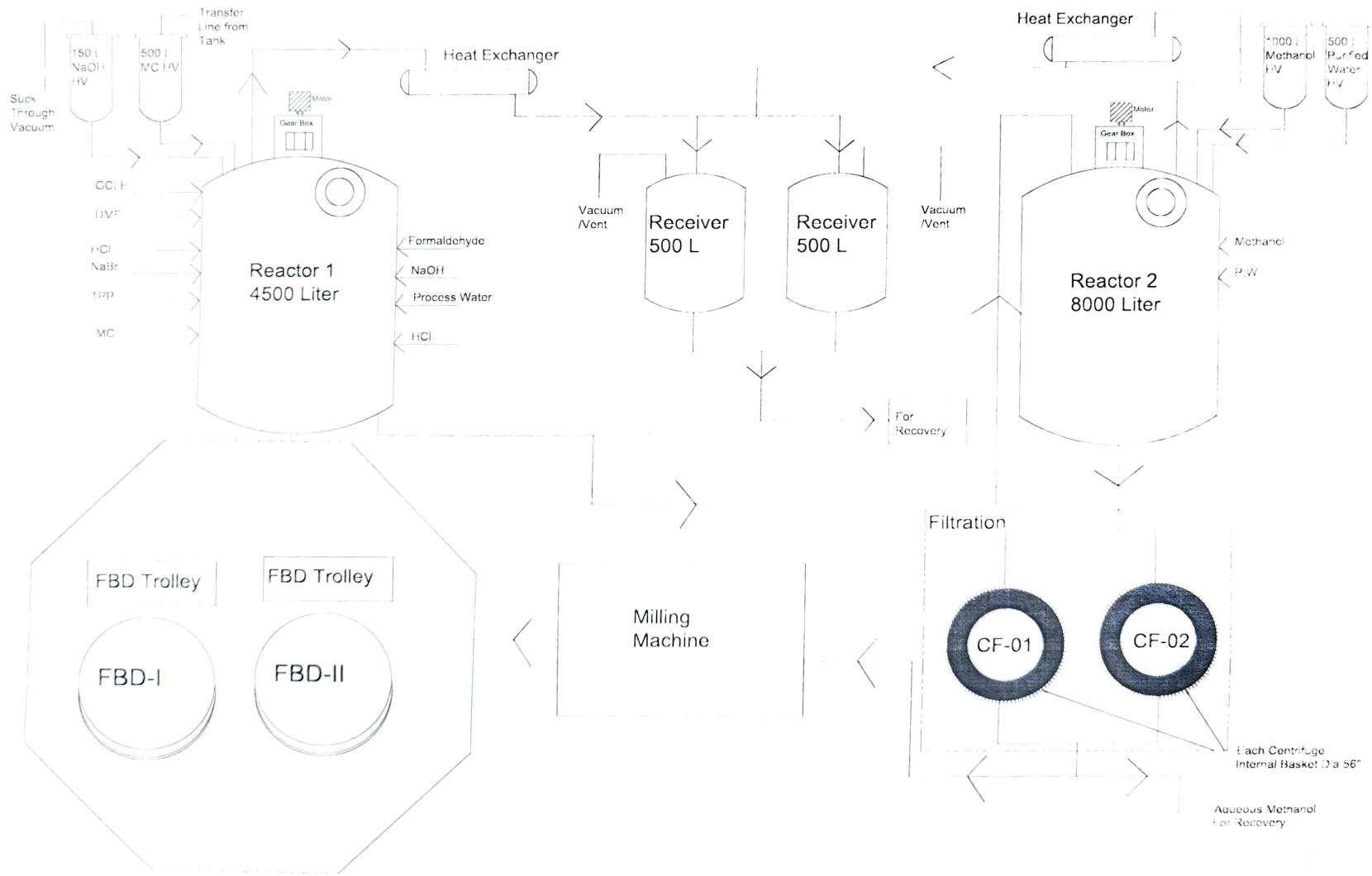
ANNEXURE VIII

PROCESS FLOW DIAGRAMS

PHARMAGEN LIMITID

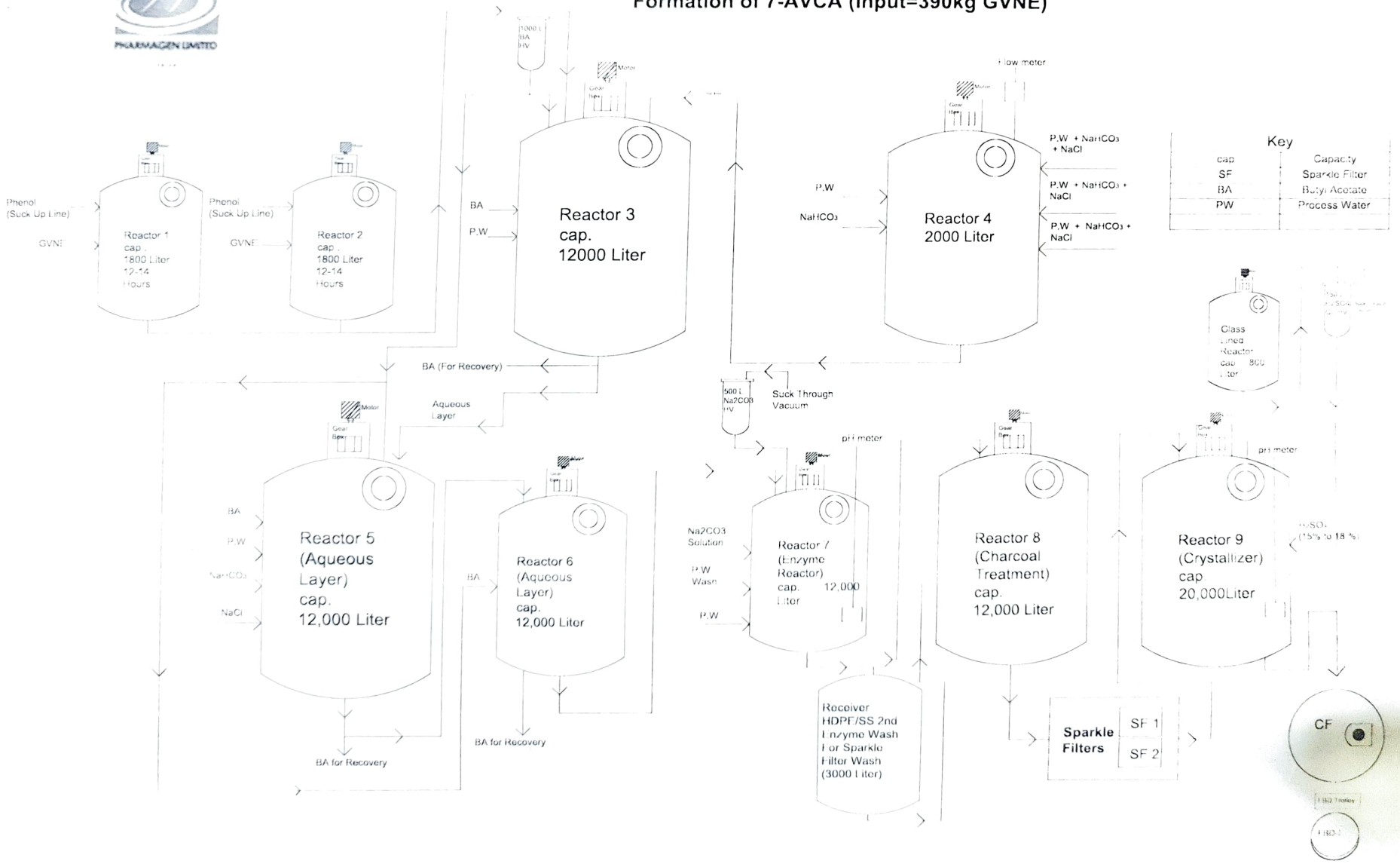
PHARMAGEN LIMITED

Formation of GVNE (Input=500kg GCLE)



PHARMAGEN LIMITED

Formation of 7-AVCA (Input=390kg GVNE)



ANNEXURE IX

WATER BALANCE SHEET

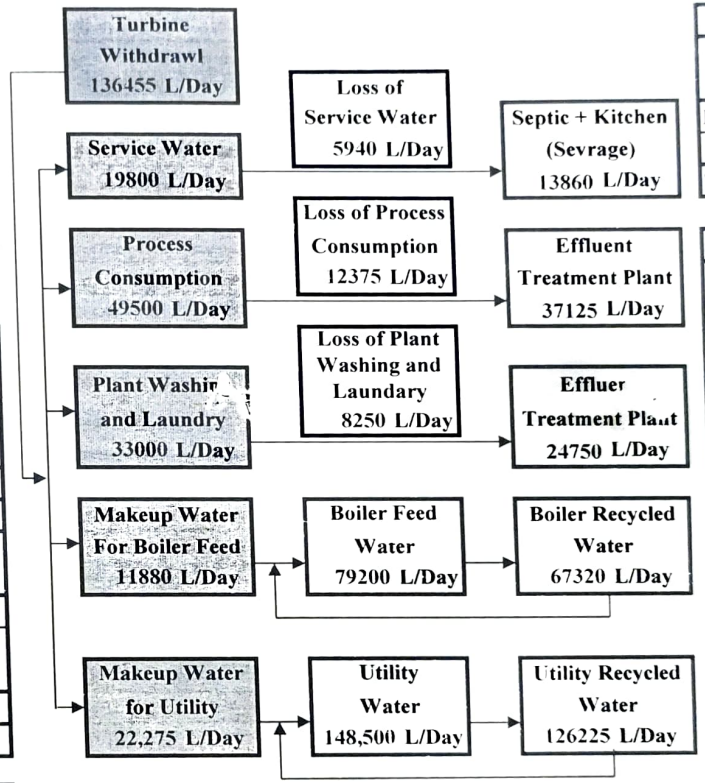
PHARMAGEN LIMITID

Water Balance Flow Sheet

Distribution of Turbine Withdrawl			
Description	Usage L/Day	Usage L/Year	Usage m^3/Year
Service Water	19800	7227000	7227.00
Process Consumption	49500	18067500	18067.50
Plant Washing and Laundry	33000	12045000	12045.00
Makeup Water for Boiler Feed	11880	4336200	4336.20
Makeup Water for Utility	22275	8130375	8130.38
Total Turbine Withdrawl	136455	49806075	49806.08

Total discharge of Waste Water			
Discharge Without Treatment			
Description	Usage L/Day	Usage L/Year	Usage m^3/Year
Drainage (Sevarage)	13860	5058900	5058.90
Discharge After Treatment			
Description	Usage L/Day	Usage L/Year	Usage m^3/Year
Effluent Treatment (Process wash)	37125	13550625	13550.63
Effluent Treatment (Washing & Laundry)	24750	9033750	9033.75
Total Effluent Treated Waste Water	61875	22584375	22584.38
Total discharge of Waste Water	75735	27643275	27643.28

Consumed Water (Evaporation / Leakage)			
Description	Usage L/Day	Usage L/Year	Usage m^3/Year
Makeup Water for Boiler Feed	11880	4336200	4336.20
Makeup Water for Utility	22275	8130375	8130.38
Loss of Service Water	5940	2168100	2168.10
Loss of Process Consumption	12375	4516875	4516.88
Loss of Plant Washing and Laundary	8250	3011250	3011.25
Drainage (Sevarage)	13860	5058900	5058.90
Total Effluent Treated Waste Water	61875	22584375	22584.38
Total Consumed Water	136455	49806075	49806.075



Total Recycled			
Description	Usage L/Day	Usage L/Year	Usage m^3/Year
Boiler Recycled Water	67320	24571800	24571.80
Utility Recycled Water	126225	46072125	46072.13
Total Recycled Water	193545	70643925	70643.925

Total Daily Consumption			
Description	Usage L/Day	Usage L/Year	Usage m^3/Year
Turbine Withdrawl	136455	49806075	49806.08
+	+	+	+
Total Recycled	193545	70643925	70643.93
Total Daily Input	330000	120450000	120450.00

ANNEXURE X

AUTHORITY LETTER IN FAVOR OF PROPONENT

PHARMAGEN LIMITID

PHARMAGEN LIMITED
Factory: Kot Nabi Bukshwala,34 K.M.
Ferozepur Road, Lahore - Pakistan.
Tel: (+92-42) 35935261-66
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E-mail: pblbd@hotmail.com
Web: www.pharmagen.com.pk

Striving To Serve Humanity

AUTHORITY LETTER

I, Pervez Hussain Sufi, Managing Director M/S Pharmagen Limited hereby authorize **Mr. Jawad Ur Rehman Bajwa** S/O Khalil Ur Rehman Bajwa bearing CNIC No 31304-2014857-5 who is working as factory manager to act as proponent on behalf of M/S Pharmagen Limited and to deal with all the matters related to the filing of petition/representation in any court of law government authorities regarding the subject project.

The resolution has been recorded in the Minutes Book of the Company.

Managing Director

M/S Pharmagen Limited

PHARMAGEN LIMITED

HEAD OFFICE:
5-A, Zafar Ali Road, Gulberg V, Lahore. 54660 - Pakistan. **Tel:** +92 (042)35761434 -35751093
Fax: +92 (042)35750926,35754972 **UAN:** (042) 111-111-305 **Email:** pblpk@brain.net.pk
ISO 9001 : 2015, ISO 14001 : 2015, 45001 : 2018 & ISO 17025 : 2017

ANNEXURE XI

WASTEWATER DISCHARGE APPROVAL

PHARMAGEN LIMITID

Public Works Department

RECEIPT FOR PAYMENT TO GOVERNMENT

Book No. 13 Receipt No. 1284 PLACE LHR

Dated 28-8-2024

~~DIVISION~~

SUB/DIVISION

Received from Pharmagen LMT vide cheque No. 330-83618 dt 20-8-2024

Rs. 17,500/- Rupees Seventeen Thousand Five Hundred only)

on account of drainage charges for the year 2024-25

NOT TRANSFERABLE

Cashier or Accountant

Signature

Sub Divisional Officer
River Survey Drainage Sub Division
Lahore

حکومت پنجاب محکمہ آبپاشی
ایگزیکٹو انجینئر لاہور ڈرینج ڈویژن
کنال بنک دھرمپورہ لاہور

GOVERNMENT OF THE PUNJAB
IRRIGATION DEPARTMENT
OFFICE OF THE EXECUTIVE ENGINEER
LAHORE DRAINAGE DIVISION LAHORE

☎ 042-99250327 ✉ xenldd@yahoo.com

To,

MR.MUHAMMAD HASHIM,
General Manager,
M/S Pharmagen Limited,
Kot Nabi Bukshwala, 34-Km
at Ferozepur Road,Lahore.

No.LDD/2024/ 1405 /124-M Dated Lahore, the 16 Oct, 2024

SUBJECT: - RENEWAL OF AGREEMENT/NOC FOR DISCHARGING WASTE WATER OF M/S PHARMAGEN LIMITED, 34-Km FEROZPUR ROAD,TEHSIL LAHORE, DISTRICT LAHORE INTO KOT MELA RAM DRAIN AT RD. 5+000-6+000/RIGHT.

Reference: -Your request No. Nil Dated.26-09-2024

Please find enclosed herewith the copy of agreement cited as subject

Above after renewal of the agreement for disposal of effluent charges 0.50 Cs from

July, 2024 to June, 2025.

It is for your kind information.

D.A/As above

Executive Engineer,
Lahore Drainage Division
Lahore.

C.C.

Sub Divisional Officer, River Survey Drainage Sub Division, Lahore.

ANNEXURE XII

FIRE FIGHTING EQUIPMENT LIST

PHARMAGEN LIMITID

PHARMAGEN LIMITED

Emergency Equipment

Sr. No.	Device Name	Equipment Type	Penicillin (BD-I)	Cephalosporin (BD-II)	MPP (BD-III)	Total Number
01	Fire Extinuishers	DCP	38	21	44	103
		DCP Auto	5	3	7	15
		DCP Trolleys	3	2	5	10
		AFFF	14	9	15	38
		AFFF Trolleys	-	2	2	4
		CO_2	3	4	3	10
		Halotron	2	-	-	2
02	Hydrants	Piller	8	8	7	23
		Monitor	1	1	3	5
03	Fire Hose Reels	Fixed	5	4	8	17
04	Fire Hose Boxes	Box	9	8	7	24
05	Foam Generator Trolleys	Trolley	2	1	2	5
06	Sand Pits	Pit	5	3	2	10
07	Sand Bucket Stands	Stand	5	3	2	10
08	Emergency Exits	Glass	12	11	14	37
		Metal	-	1	-	1
09	Emergency Extension Ladders	Extention	1	-	1	2
10	Hand Sirens	Mechanical	1	2	3	6
11	Emergency Electric Sirens	Electrical	4	3	-	7
12	Smoke Detectors	XP Photo	13	2	57	72
	Call Points	XP95	-	-	12	12
13	Heat Detectors	XP95	-	-	26	26
	Out Put	XP Control	-	-	12	12
14	Eye Wash/Shower	Vertical	7	9	5	21
15	Eye Wash	Bottle	1	1	1	3
16	Emergency Exit Lights	Chargeable	1	3	6	10

ANNEXURE XIII

PREVIOUS ENVIRONMENTAL APPROVAL

PHARMAGEN LIMITID

ENVIRONMENT PROTECTION DEPARTMENT

Government of the Punjab
National Hocky Stadium, Lahore.

NO. DD (EIA)/EPA/F-18(EIA)/1303/2010/664
Dated: 22 / 05 / 2015

To

The Chief Executive,
M/S Pharmagen Limited,
34-Km Ferozpur Road,
Lahore.

Subject: **DECISION OF EPA PUNJAB FOR THE OPERATION OF M/S PHARMAGEN LIMITED LOCATED AT 34-KM KOT NABI BAKHUSH WALA, FEROZPUR ROAD, DISTRICT LAHORE**

(Under Section 12 of PEPA, 1997 read with IEE/EIA Regulation, 2000)

Reference: Environmental Approval issued vide No. DD(EIA)/EPA/F-18(EIA)/2010/Cir/794, Dated: 15.12.2010 for Construction Phase.

1.	Description of Project:	Operation of M/S Pharmagen Limited for enhancement of production capacity of Active Pharmaceutical Ingredients (APIs), Penicillin and Cephalosporin production capacity will be increased from 2600 kg / day to 6100 kg / day.
2.	Location of Project:	The project is located at 34-Km Nabi Bakhush Wala, Ferozpur Road, District Lahore.
3.	Date of receiving	10-09-2013

4. After review of the Environmental Impact Assessment (EIA) Report and other relevant record, the Environmental Protection Agency, Punjab has decided to accord approval for Operational phase in favour of the above-mentioned project to safeguard the environmental issues subject to the following conditions:

(i) The proponent shall ensure compliance of the National Environmental Quality Standards (NEQS).

(ii) Mitigation measures suggested in the EIA Report and Environmental Management Plan (EMP) shall be strictly adhered to minimize any negative impacts on soil, ground water, air and biological resources of the project area. The proponent shall depute staff to monitor compliance of EMP.

(iii) Monitoring shall be carried out during the entire period of the project activities. Monitoring reports of the whole operation shall be submitted to EPA, Punjab on monthly basis.

(iv) The proponent shall not discharge untreated wastewater and other pharmaceutical waste in a surface or sub-surface water body.

(v) The proponent will install the standby power generator (if required) by adopting sound proofing techniques i.e., by installation silencer and it shall be equipped with proper smoke arrester / scrubber and stack / chimney with proper height to discharge the hot gases / smoke safely.

(vi) The proponent shall care about noise issues during operation stage of the project.

(vii) The proponent shall establish a system for controlling fugitive dust and other emissions.

P.T.O

(viii) The proponent shall adopt good manufacturing practices for internal quality assurance of the unit.

(ix) The proponent shall ensure that strict and efficient health and safety measures are in place for protection of workers backed by a comprehensive emergency response system.

(x) The proponent shall obtain separate approval from climate change division, Islamabad in case of import of any material.

(xi) The proponent shall plant 2000 trees in the site on available space within six month.

(xii) The proponent shall do proper landscaping after completion of the project.

(xiii) The proponent shall obtain approval/NOC of all other concerned departments including PSQCA / Health before commencement of work.

(xiv) The proponent shall convey the name of the Environmental Manager of the project along with his complete Mailing Address and Phone Numbers.

5. The proponent shall be liable for correctness and validity of the information supplied by the Environmental Consultant.

6. The proponent shall be liable for compliance of Sections 17 and 18 of IEE/EIA Regulations, 2000, regarding approval, confirmation of compliance, entry, inspections and monitoring.

7. Any change in the approved project shall be communicated to EPA, Punjab and shall be commenced after obtaining the approval.

8. This approval shall be treated as null and void if all or any of the conditions mentioned above, is/are not complied with. This approval does not absolve the proponent of the duty to obtain any other approval or consent that may be required under any law in force and is subjudice to legal proceedings in any legal fora / court.

9. This approval can be withdrawn at anytime without any prior notice if deem necessary in the public / national interest.

(Amen Hanif)
ASSISTANT DIRECTOR (EIA)
for Director General, EPA, Punjab

NO. & DATE EVEN.

A copy is forwarded for information to:

1. The Deputy District Officer (Environment), Lahore with reference to his letter No. 241/DO(Env)/LHR, dated: 17-02-2015. He is requested to ensure compliance of the above-mentioned conditions under intimation to this office.

(Amen Hanif)
ASSISTANT DIRECTOR (EIA)
for Director General, EPA, Punjab

ENVIRONMENT PROTECTION DEPARTMENT
Government of the Punjab
National Hockey Stadium, Lahore

No. DD(EIA)/EPA/F-18(EIA)/2010/[illegible]525
Dated [illegible]/05/2024

To,

The Chief Executive,
M/s Pharmagen Limited,
34-Km Ferozepur Road,
Lahore

Subject: **EXTENSION IN VALIDITY PERIOD OF ENVIRONMENTAL APPROVAL ISSUED TO OPERATIONAL PHASE OF THE PROJECT "M/S PHARMAGEN LIMITED LOCATED AT 34-KM KOT NABI BAKHUSH WALA, FEROZPUR ROAD, DISTRICT LAHORE"**

Reference: Your letter dated 25.08.2020

I am directed to intimate that Environmental Approval for Operational Phase issued vide EPA Punjab letter No. DD(EIA)/EPA/F-18(EIA)/1303/2010/664 dated 22.05.2015 is valid for another three years from 29.04.2024 to 28.04.2027 under Regulation 16 (2) of IEE / EIA Regulation, 2022 read with Section 12 of PEP Act, 1997 (Amended 2012) with the same terms & conditions.

ASSISTANT DIRECTOR (EIA)

C.C:
The Deputy Director (Environment), Lahore for information, please.

ANNEXURE XIV

SOLID WASTE MANAGEMENT PLAN

PHARMAGEN LIMITID

PHARMAGEN LIMITED
Waste Management Plan

Chemical waste management Guidelines:

Introduction:

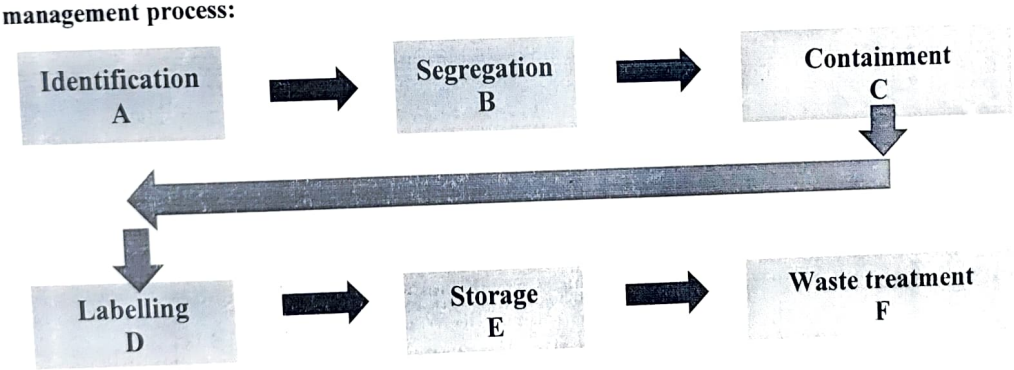
Chemical waste can be classified to one or more of of the following hazards:

Corrosive Flammable Reactive Toxic

Waste should be best managed using the following guidelines:

Most desirable ↑ Least desirable	▪ Reduce waste production at the source (e.g. conducting smaller scale experiment) ▪ Recover and Reuse waste on site (e.g. recycling) ▪ Recycle off off site ▪ Treat waste to reduce volume or toxicity ▪ Dispose waste in to the environment or in landfill

Waste management process:



A. Identification: identifying the chemical properties of the waste
B. Segregation: Segregation of the chemical based on its properties
C. Containment: knowing the type of the container needed to store the waste
D. Labeling: label the waste for the essential information
E. Storing the waste at a holding area
F. Treating the waste to reduce reactivity or toxicity before disposal

For the processes from A to E.

They are usually by the lab staff as for process if it can be managed by the both the lab staff or the waste disposal vendor.

PHARMAGEN LIMITED
Waste Management Plan

A. Waste identification:

- It is very important to first identify the chemical / materials used in order to identify the characteristics of the waste it may produce
- Characteristics of the chemical / materials can the obtained from the safety data sheet. (SDS). Globally harmonized system of classification and labelling of chemicals (GHS).
- This is to ensure that the chemical of its waste characteristics are communicated effectively for safe disposal.

B. Segregation of waste:

Good chemical hygiene creates safe workplace environment.

Only put compatible chemicals in the same waste container.
Do not mix solid in liquid. Do not mix halogenated with non-halogenated chemicals. Incompatible chemicals should be stored in separate containers.

Placed in different rooms to avoid disaster sure leakages occur. Compatibility chart is use to determine compatibility of chemical waste storage.

Do not store the following near each other:

- Acids and bases.
- Strong oxidizers and organic compound
- Powdered are reactive metals and combustible materials.
- Water reactive chemicals and Water or other chemicals.
- Flammable waste cannot be stored with oxidizing waste and have to store in separate compartment with fire rating of two hours.

Remember mixing of incompatible chemicals may result in explosion, Releasing of harm harmful gases, corrosion of waste container. Thus leakages of waste cause releasing of excessive heat from exothermic reaction and may cause ignition of fire.

C. Containment:

Waste containment containers used to hold the waste must be compatible (not reactive), and sturdy and leak proof. Chemical wastes which are stored in primary containers should be placed in secondary container. Primary container should be filled ¾ full and sealed tightly (no para films). The secondary container should be able to hold the 110% of the volume of the primary container. These are some examples of the chemical wastes which are compatible and incompatible for storage.

D. Labelling :

Labelling of the waste containers prevents any accidents. Label the waste for the essential information i.e. description of the material, weight/volume, origin of waste etc.

E. Storage:

Storing the waste at a holding area. Holding area should be appropriate for the type waste. Protect the waste from direct sunshine, rain and flooding. Storage must adhere the compatibility issues and all unauthorized entries i.e. stray animals and unauthorized personnel must be restricted.

F. Waste treatment:

Treating the waste to reduce reactivity or toxicity before disposal. May include reuse, recycling etc.

ANNEXURE XV

SOLID WASTE CONTRACT WITH EPA CERTIFIED BODY

PHARMAGEN LIMITID

PHARMAGEN LIMITED
Factory: Kot Nabi Bukshwala,34 K.M.
Ferozepur Road, Lahore - Pakistan.
Tel: (+92-42) 35935261-68
Fax: (+92-42) 35935269
UAN: 111-111-305
E-mail: pblbd@hotmail.com
Web: www.pharmagen.com.pk

Striving To Serve Humanity

PHARMAGEN LIMITED

MEMORANDUM OF UNDERSTADING FOR WASTE MANAGEMENT SERVICES

This MOU (Memorandum of Understanding) is entered into as of this 1st day of May 2022, by and between **Pharmagen Limited**, which has an office on Kot Nabi Bukhsh wala 34 K.M Ferozpur Road, and **A.T Waste Management (ATWM)** a hazardous waste management company, which has its office at Garden Town, Al-Qadir Heights 5Th Floor, Office No. 506 for hazardous waste management services.

WHEREAS, **Pharmagen Limited** requires professional waste management services to treat, incinerate and /or dispose of said hazardous waste;

WHEREAS, **ATWM** can provide professional waste management services and has the resources, capability and a team of highly qualified experienced experts to provide the environmentally safe disposal of hazardous and infectious waste through incineration;

Now THEREFORE, in consideration of the premises and material promises set forth below the parties hereby agree as follows:

1. **ATWM** shall provide the Services at the price stated below for the period 1st May- 2022 to 30th April - 2025 (03 Years) will be as under:

   Incineration Charges Inclusive of taxes **Rs. 100,000/- Month (But without P.R.A)**

2. **ATWM** reserves the right to increase the rate within the year / next year keeping in view the increase in taxation & other expenses, if agreed by the both parties.
3. **ATWM** will be responsible for Loading / Off-Loading.
4. **ATWM** will furnish the safe disposal certificate per consignment to **Pharmagen Limited.**
5. Safe disposal certificate will be valid up to 60 days.

HEAD OFFICE:
5-A, Zafar Ali Road, Gulberg V,
Lahore 54660 - Pakistan.
Tel: +92 (42) 35761434 - 35751093
Fax: +92 (42) 35750926, 35754972
UAN: (042) 111-111-305
E-mail: pblpk@brain.net.pk
Web: www.pharmagen.com.pk

PHARMAGEN LIMITED
Factory: Kot Nabi Bukshwala,34 K.M.
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Fax: (+92-42) 35935269
UAN: 111-111-305
E-mail: pblbd@hotmail.com
Web: www.pharmagen.com.pk

Striving To Serve Humanity

6. Both parties are liable to follow EPA's rules and regulations, "The contractor shall dispose of empty chemical containers / drums after crushing / cutting the drums as per Environmental Approval point # 04 condition # xv and Permission for Solvent Storage point # 1 condition # xv respectively". Any kind of violation will cause termination of the contract.

7. If certification status of **ATWM** from EPA is changed at any instant, **ATWM** will be responsible to intimate **Pharmagen Limited** immediately.

IN WITNESS WHERE OF, the parties have caused this MOU to be executed by their duly authorized representatives as of the day and year first above written.

Signature: _____

Name: Javeed Hussain

For Pharmagen Limited

Address: Kot Nabi Bukshwala
34 K.M Ferozpur Raod Lahore.

Tele: 042-35935261-6

Date April 30, 2022

Witness # 1 Rizwan Nasir

Witness # 2 Fiaz Ahmad

Signature: _____

Name: Muhammad Naseer

For A.T WASTE MANAGEMENT

Address: Garden Town Al Qadir
Heights 5th Floor Suite # 506-7, Lahore.

Tel. 0344-5356668 / 042-35843581-3

Date April 30, 2022

Witness #1 M. Razaq

Witness # 2 Haseeb Naveed

HEAD OFFICE:
5-A, Zafar Ali Road, Gulberg V,
Lahore 54660 - Pakistan.
Tel: +92 (42) 35761434 - 35751093
Fax: +92 (42) 35750926, 35754972
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E-mail: pblpk@brain.net.pk
Web: www.pharmagen.com.pk

ISO 9001 : 2015, ISO 14001 : 2015, 45001 : 2018 & ISO 17025 : 2017

A.T WASTE MANAGEMENT

We Manage

Ref #: 114/IND/2025
Date:12 February, 2025

CERTIFICATE OF DISPOSAL

DETAILS OF WASTE

Source:	**PHARMAGEN LIMITED.**
Client OGP No:	**2493**
Nature of the Waste:	**Carbon Waste, Waste Poly Bags.**
Month of Receiving the Waste:	**11 February, 2025**
Net Weight:	**4000/- Kgs**
Completion of work:	**12 February, 2025**

COMMENTS:

Total Material is disposed of successfully.

- Liquid Waste from Pharmagen Limited is being used with other fuels to incinerate the other waste.

SUMMARY OF DISPOSAL

The consignment received by A.T Waste Management was safely transported at Site.

Average Analysis of Flue Gases (Final Outlet)

Oxygen	13.7 %
Carbon Monoxide	43.4 mg/Nm^3
Carbon Dioxide	5.9 %
Nitrogen Dioxide NO_2	1.4 mg/ Nm^3
Hg and its compounds	ND
Particular Matter	31.5

Chambers Temperature:

Chamber – I = 850-950 ^{O}C

Chamber – II = 1000-1200 ^{O}C

(I certify, on behalf of A.T Waste Management, relative to the waste material described in this document, that the material was handled, and subsequently disposed of in accordance with all applicable local rules and regulation of EPA Punjab.)

HSE Manager

Official Seal of the Company

Office No. 731, Block-2, Sector: D-1,Shah Jilani Road, Township, Lahore.
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ANNEXURE XVI

GOOGLE EARTH MAP

Pharmagen Limited

Location Map

ANNEXURE XVIII

SPECIFICATIONS OF BOILER

PHARMAGEN LIMITID

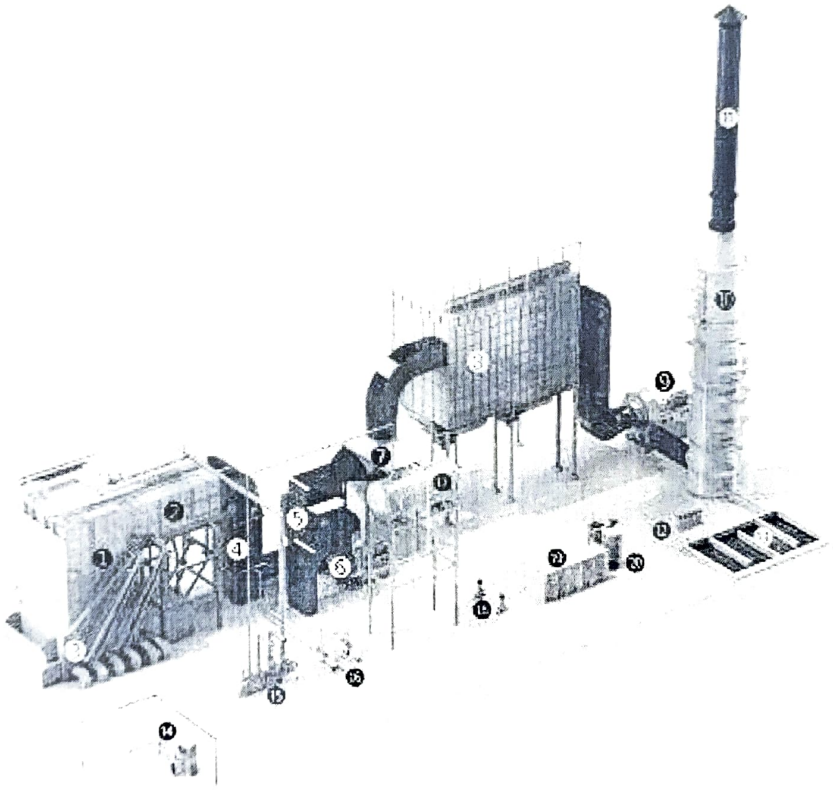
ENCOM

金马热能 JINMA THERMAL ENERGY

Offer for 6TPH (12.5barg) Biomass Steam Boiler (JINMA, China)

Version	Final Offer (RV-4)
Client	Sami Pharmaceuticals (Private) Ltd.
Quote Code	051424/C-112
Date	May 14, 2024
Boiler Type	Double Drum Water tube Biomass Boiler with Reciprocating Step Grate
Efficiency & Fuel	85-87%, Multiple Biomass (Rice Husk, Bagasse, Corn Stalk, Cotton Stalk, Mustard Straw, Coal (0-50mm)
Fuel Consumption	220kg/ton @ 3300Kcal/kg, 20% moisture
1150-1400°C reciprocating step grate, Siemens PLC, Grundfoss pumps, ABB Inverters	

Biomass Boiler with Reciprocating Step Grate



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金马热能

JINMA THERMAL ENERGY

Technical Summary

Pos.	Description	Qty.	Total Price
01	**Biomass** (multi fuel) fired steam boiler plant	1	
01.01	**SZW 6-1.25** (with continuous feed water regulator)	1	
01.01.01	**Boiler and equipment** (6t/h, 1.25MPa / 12.5bar) with following specification: Steam capacity: Net 6t/h @ 1.25MPa/12.5bar Rated pressure: 12.5Mpa (193°C) Exhaust Gas Temperature: 135°C (at emission [illegible] local regulation) Design pressure: 12.5bar Hydraulic test pressure: 16.5bar Design efficiency: 85-87% Fuel: Biomass (Rice Husk, Bagasse, Corn Stalk, Cotton Stalk, Mustard Straw, Coal and others with multi-fueling) Fuel Consumption: 220 (GCV 3300Kcal/kg, Moist: 20%) Boiler heating surface 196 m² (Radiant 41m², Convection 155m²)	1	
01.01.02	**Combustion system** reciprocating type step grate 1150-1400°C JMW6[illegible]-1-0, Zg35Cr25Ni7Si with complete multiple step hydraulic movement system, Secondary air duct device, Ventilation branch pipe device	1	
01.01.03	**Biomass fuel hopper**: Silo, level control, Furnace waste wood pusher box, Heat resistant feed inlet, Pushing plate return residual hopper	1	
01.01.04	**Hydraulic station**: Hydro cylinder including explosion proof oil pipe joint, oil pump with additional pump with automatic control, chiller, motor (Siemens), controller	1	
01.01.05	**Complete set of primary instruments** and valve PN16 (top Chinese quality), pneumatic control valve with separate cylinder inlet, Bottom blow down and surface blow down system, electric water supply control valve 2-way, sample cooler (2 x JM0010.0), 2 x PRV/PSV boiler to feed water tank PN16	1	
01.01.05	**Operational platform** and steel frame (600mm)	1	
02.01	**FD FAN:** GG6-1 with VFD (Siemens Motor: 7.5kw)	1	
02.02	**ID FAN:** GY6-18 with VFD (Siemens Motor Rating: 75kw)	1	
02.03	**Secondary air fan** with VFD (Siemens Motor Rating: 3.5kw)	1	
03	**PLC control cabinet** (Siemens PLC S71500+HMI 15", Boiler efficiency monitoring system, Electrical components are mainly Schneider, ABB VFD, Rosemount instruments , steam & water flow meter (E+H), Glass plate level gauge, TDS sensor with control valve	1	
04	**Feed water pumps** (Grundfos CR 10-18 with VFD) 7.5KW	2	
05	**Control valve** for feed water tank heating with automation on PLC DN65	1	
06	**Steam header:** Φ426 (Inlet 1xDN133, Outlet DN125, DN100, DN80)	1	
07	**Steam pneumatic control valve** DN125 with steam flow logic/power failure logic	1	
08	**Automatic blow down** control valve DN40	1	
09	**Automatic TDS/Conductivity** sensors with PLC control	1	
10	**Automatic surface** blow down control valve	1	
11	**Temperature monitoring** and control of after boiler, Eco, Multi-cyclone, Wet scrubber and ID fan before & after preheater, before and after secondary air fan with monitoring & control on PLC	1	

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Pos.	Description	Qty.	Total Price
12	**Cameras** for water level, fuel feeding hopper and feed water tank	1	
13	**Flue gas oxygen sensor** & analyzer with automation	1	
14	**Instrumentation** and control cables	1	
15	**Economizer** (Heating surface 131m²)	1	
16	**Economizer** & Air preheater bypass	1	
17	**Air preheater** (Heating surface 125m²)	1	
18	**Scrapper slag remover** (Ash removing system automatic with additional conveyor belt and collecting waste hopper) SGC6T-0 (900mm*4500mm, Siemens)	1	
19	**Thermal deaerator** (with tank 7m³ Including) (Siemens motors, 2xpumps 2bar level control, pressure control DN40)	1	
20	**Complete refractory** material (5-10% extra)	1	
21	**Soot blowing** complete package system (1 x Shock wave & 3 x compressed air soot blowers) with PLC control –time & air-steam cyclone logic	1	
22	**Furnace pressure transmitter** with complete automation on HMI (--500MPa to 500Pa)	1	
23	**Furnace temperature transmitter** with complete automation on HMI (0-1300°C)	1	
24	**Steam flow meter** with complete graphics & trending on PLC control (E+H)	1	
25	**Water flow meter** PN40, DN50 with complete graphics & trending on PLC control (E+H)	1	
26	**Wet scrubber** XTL6T-0 (Compound granite made with venture with 2 sets acid-resisting submerged pumps	1	
27	**Multi-Cyclone** dust collector XTD6T-0 (Ceramic multi-tube dust separator for fly ash removal	1	
28	**Multi-Cyclone** bypass with control logic	1	
29	**Screw conveyor** system complete automation with automatic (width 500mm, spiral length 2m, 6t/h capacity)	1	
30	**Belt type feeding system** with auto fuel control system(width 800mm, slope 25°, belt length L=15000, 5t/h capacity)	1	
31	**All moving parts safe guards**	1	
32	**Boiler fuel hoper** fuel control automatic valve with back fire protection	1	
33	**Bag type dust collector** DMC980 (filtration area 500m², efficiency 99.8%)	1	
34	**Cables tray** & cables	1	
35	**2-year** spare parts	1	
36	**Warranty** 24-months against manufacturing defects	1	
37	**Commissioning** of the boiler	1	
	Total Ex-Works Price (USD)		*188,000.00*

Note: Final transport charges will be according to at the time of order confirmation.

Technical Overview

01 BIOMASS Boiler plant

Biomass boiler SZW 6-1.25 (6tph 1.25mpa/12.5barg)

01.01

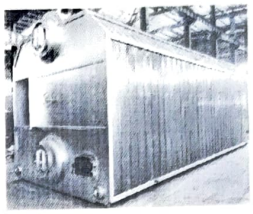
Optimized Design for Maximized Efficiency: Our boiler features a cutting-edge double-drum, water tube structure, making it a paragon of efficiency and durability.

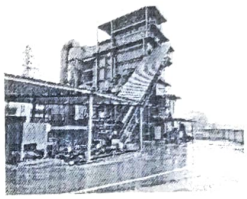
Advanced Membrane Wall Technology: The inclusion of membrane walls enhances overall system reliability, improving heat exchange while reducing the risk of leakage and thermal strain.

Additional Heating Surface: The design incorporates an extra 10% heating surface area, translating to better heat transfer and ultimately, higher system efficiency.

Water-Cooled Furnace Arch: A proprietary water-cooled furnace arch is integrated to prevent overheating and refractory collapse, thereby ensuring operational integrity.

Flexible Operational Load: The system is capable of operating within a broad load range from 0% to 110%. For optimum performance, we recommend operational loads ranging between 35% to 95%.





Reciprocating step grate in alloy steel (Grate bar material RTCI/CRNI)

01.01.02

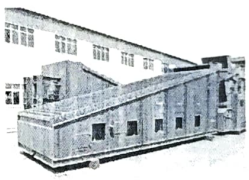
High-Performance Alloy Material: Comprised of 35% Chromium and 4% Nickel, the alloy offers unmatched corrosion resistance, mechanical strength, and durability.

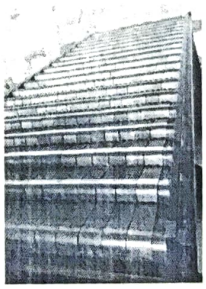
Precision Engineering: Reciprocating step grate is engineered for optimal fuel distribution and combustion efficiency, minimizing unburned residues and emissions.

High Thermal Conductivity: The material properties of the alloy ensure excellent thermal conductivity, resulting in better heat utilization and optimized combustion thru even distribution of combustion air.

Low Maintenance: The alloy composition is strategically chosen to reduce wear and tear, translating to lower operational and maintenance costs.

Biomass fuel flexibility: Our reciprocating step grate is adaptable to a variety of fuel types including biomass, natural gas, and light/heavy fuel oils, making it a versatile component in any industrial heating solution.





Automatic hopper for biomass fuel supply

01.01.03

Generous Holding Capacity: Designed with a substantial 1000kg holding capacity, allowing for longer operational durations without the need for frequent refilling.

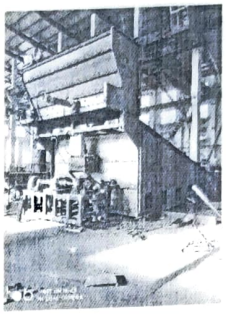
Advanced Double Roller Technology: Utilizes state-of-the-art double roller mechanisms for consistent and unobstructed fuel feeding, ensuring smooth boiler operations.

Precision Engineered: Specifically designed to work in perfect harmony with the boiler and reciprocating step grate, facilitating optimal fuel distribution and combustion.

Automated Fuel Management: Equipped with sensor-based controls for real-time monitoring, ensuring precise and efficient fuel allocation.

Safety Measures: Features multiple safety protocols, including anti-jamming systems, anti-back fire safety emergency stop functions, for risk-free operations.

Environmentally Friendly: Compatible with a range of sustainable green fuels, aligning with global eco-friendly initiatives.



Primary instruments and bellow seal globe valves

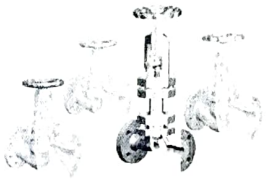
01.01.04

High-Precision Instrumentation: Features state-of-the-art primary instruments meticulously calibrated for precise monitoring and control, ensuring optimal performance and safety.

Robust Bellow Seal Globe Valves: Designed with high-quality bellow seals to provide a leak-proof and maintenance-free operation, enhancing process reliability and system longevity.

Comprehensive Functionality: These valves are multifaceted, suitable for flow regulation, isolation, and pressure management, offering an all-in-one solution for complex industrial applications.

Quality and Safety Compliance: Meets and exceeds industry standards for both quality and safety, backed by rigorous testing and a comprehensive warranty.



02.01

Force Draft (FD) Fan assembly 7.5kWe

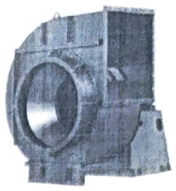
High-Efficiency IE3 Motor: Comes equipped with 7.5kWe IE3 motor that excels in energy efficiency, effectively reducing overall power consumption and operational costs.

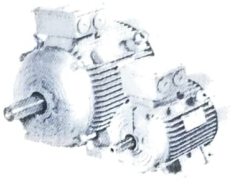
Variable Frequency Drive (VFD): Integrated with ABB VFD for load dependent speed control, enhancing energy savings, improving process control, and extending the life of the motor and fan assembly.

Heavy-Duty Base Frame: The skid-mount assembly features a robust, heavy-duty base frame, built to withstand the harsh industrial environment, and ensure stable operation.

Direct Drive Design: Utilizes a belt-less, direct drive system for maximum power transfer efficiency, reducing maintenance costs and improving system reliability.

Optimal Air Flow Control: Designed for precise control of air flow into the combustion chamber, this ensures peak combustion efficiency and minimizes harmful emissions.





02.02

Induced Draft (ID) Fan assembly 55kWe

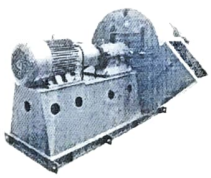
High-Efficiency Motor: Comes equipped with 55We motor that excels in energy efficiency, effectively reducing overall power consumption and operational costs.

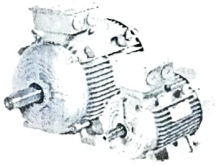
Variable Frequency Drive (VFD): Integrated with ABB VFD for load dependent speed control, enhancing energy savings, improving process control, and extending the life of the motor and fan assembly.

Heavy-Duty Base Frame: The skid-mount assembly features a robust, heavy-duty base frame, built to withstand the harsh industrial environment, and ensure stable operation.

Direct Drive Design: Utilizes a belt-less, direct drive system for maximum power transfer efficiency, reducing maintenance costs and improving system reliability.

Optimal Air Flow Control: Designed for precise control of air flow into the combustion chamber, this ensures peak combustion efficiency and minimizes harmful emissions.





02.03

Secondary Air Fan Assembly

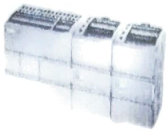
High-Efficiency Motor: Comes equipped with 3.5kWe motor that excels in energy efficiency, effectively reducing overall power consumption and operational costs.

Variable Frequency Drive (VFD): Integrated with ABB VFD for load dependent speed control, enhancing energy savings, improving process control, and extending the life of the motor and fan assembly.

Control cabinet for complete boiler plant operation

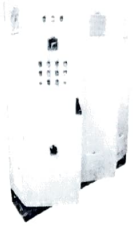
03

Siemens PLC System: For fully automatic boiler plant, we use cutting-edge Siemens PLC system for ensuring seamless automation and integration with mult-level protection and control of water feeding, pressure control, temperature control and safety chain interlocking.



15" Touch Screen Color Display: Features a user-friendly 15-inch touchscreen color display for real-time monitoring and operation, providing an intuitive interface for complete control over the boiler system.

Comprehensive Operation and Safety Control: Designed to manage all aspects of boiler operation, from fuel feeding and combustion to safety protocols. Features include fault detection, alarm systems, and automated shutdown procedures for safety compliance.



High-Level Customization: The control panel is programmable to suit specific industrial needs, providing a highly adaptable solution that can evolve with your operational requirements of future

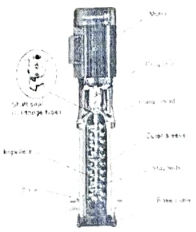
Automatic feed water pumps for continuous operation

04

Two-Set for Redundancy: This package includes two sets of pumps, allowing for one to be in main operation and the other as a backup. This dual configuration provides an extra layer of reliability and ensures uninterrupted operation of boiler plant for your factory/mill.

High-Performance Specifications: With stainless steel multistage design and a flow rate of 8m³/h and a head of 150m, these pumps are tailor-made for high-performance industrial applications.

Variable Frequency Drive (VFD): Each pump is equipped with a VFD, enabling precise control over motor speed and torque, which results in energy savings and extended equipment lifespan.



Grundfos Brand Reliability: Manufactured by Grundfos, a leader in pump solutions, these pumps stand for quality, durability, and cutting-edge technology.

Energy-Efficient Design: The integration of VFDs further optimizes energy use, lowering operational costs and aligning with eco-friendly practices.

Skid mounted unit: Comes with complete valves and fittings for quick and error free installation.

金马热能 JINMA THERMAL ENERGY

Multi-port steam header assembly

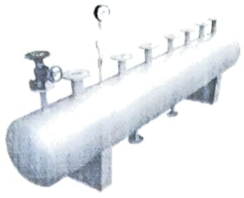
05

Optimal Dimensions: Specifically engineered with a diameter of 426mm and a length of 3.2m to suit a wide range of industrial applications, ensuring effective distribution and optimal flow of steam.

High-Quality Construction: Fabricated using top-grade materials that offer excellent thermal conductivity and mechanical strength, ensuring long-lasting durability and performance.

Versatile Connection Options: Designed for ease of integration with multiple inlet and outlet connections, 1XDN150 inlet, 2xDN150 outlets, 2xDN100 outlets, enabling seamless compatibility with various boiler systems and consumer machines.

Pressure and Temperature Resilience: Built to withstand extreme pressures and temperatures commonly encountered in industrial settings, guaranteeing safety and reliability. Upto 16barg (250°C)



High efficiency economizer for energy recovery

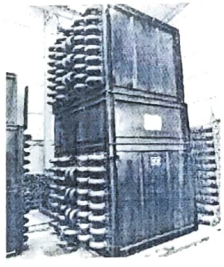
06

Large Heating Surface: Extensive heating surface of 131m², this economizer is engineered to maximize heat recovery, thereby improving overall system efficiency.

Carbon steel construction: Fabricated from high-quality carbon steel material, the economizer is designed for superior durability and exceptional thermal conductivity, ensuring consistent performance over the long term.

132kWth Power Rating: With a power rating of 132kWth, this unit is optimized for effective heat recovery without compromising on energy consumption, aligning with green initiatives and cost-saving measures.

Heat recovery concept: The inlet feed water of 80~103°C is heated upto 135°C in this economizer to gain upto 4.5% efficiency.



High efficiency air preheater

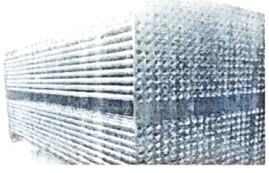
07

Significant Heating Surface area 125m²: With a generously sized of this air preheater ensures optimal heat exchange, enhancing the efficiency of the entire boiler system.

Q235 Material Construction: Manufactured from high-quality Q235 steel alloy material, known for its excellent mechanical properties and durability, the preheater stands up to the rigorous conditions of industrial use.

Energy Efficiency: Designed to preheat the air before it enters the boiler, this unit captures and utilizes residual heat, resulting in reduced fuel consumption and emissions.

Ease of Integration: Engineered for smooth incorporation into existing boiler systems, this air preheater provides a turnkey solution for boosting thermal efficiency.



08

Biomass fuel feeding conveyor system

Dimensions: Custom-engineered with durable polymer belt width of 600mm and a length of 30 meters, this conveyor system is designed to meet the unique requirements of biomass fuel handling.

Fully Enclosed Design: Featuring a fully enclosed construction, this system offers superior safety and environmental benefits by preventing fuel spillage and minimizing dust emissions.

High-Throughput Capacity: Engineered for high-capacity operations, this conveyor system efficiently handles a large volume of biomass fuel, ensuring a continuous and stable fuel supply to the boiler.

Variety of fuel: This system can feed multiple biomass to cater seasonal economics of fuels.

Ease of Integration: Automatic design for seamless integration into the boiler and fuel hopper configurations, providing a complete fuel feeding solution.

09

Automatic Slag Remover (Complete)

Efficient Slag Removal: Equipped with a large circulating chain mechanism, this slag remover is designed to automatically and efficiently extract wet bottom ash from the boiler.

Continuous Operation: Engineered for uninterrupted performance, the unit ensures that slag and ash do not accumulate, thereby maintaining optimal continuous boiler efficiency.

High Durability: The system is constructed using premium-grade materials to withstand extreme temperatures and corrosive environments, ensuring a long operational life with minimal maintenance required.

User-Friendly Design: Featuring a fully automated operation, this slag remover eliminates the need for manual intervention, significantly reducing labor costs and enhancing workplace safety.

10

Refractory material for complete boiler furnace and erection

Complete Kit: This package includes a full range of high-quality refractory materials, designed to provide superior heat insulation and structural integrity for your boiler system.

10% Excess Quantity: Thoughtfully packaged with an additional 10% material, this kit ensures that you have more than enough resources for adjustments or unexpected needs during installation.

On-Site Build Capability: This complete set of materials has been selected for its ease of use and adaptability, enabling construction directly on the installation site, thus providing flexibility for workers.

11

Thermal Deaerator for Feed Water Tank (Tank Included)

Optimized Degassing Efficiency: Engineered with advanced thermal technology, this deaerator is designed to remove dissolved gases, mainly oxygen and carbon dioxide, from feed water, thereby improving boiler performance and lifespan. The presence of dissolved gases in feed water can lead to corrosion and scale build-up in the boiler economizer. By eliminating these gases, the deaerator significantly reduces corrosion rates and scale formation, thus enhancing the efficiency and longevity of these critical components.

Robust Construction: Built from premium-grade stainless steel material that can withstand extreme temperatures and pressures, this deaerator ensures long-term operational durability and minimal maintenance

Reduced Chemical Treatment Cost: Effective degassing substantially reduces the need for chemical water treatments, resulting in cost savings.

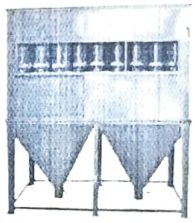
12

Multicyclone Dust Collector

Advanced Multicyclone Technology: Engineered with cutting-edge multicyclone technology, this deduster effectively captures and removes a wide range of particulate matter, ensuring cleaner emissions and improved air quality

High Separation Efficiency: Designed for superior performance with 20mg/m3 filtration with only 3mbar resistance, the unit achieves high levels of dust separation, thereby making the Biomass boiler compatible for operation in human population efficiency

Robust Construction: Built from materials that withstand harsh industrial environments, this desuter is highly durable and promises long-lasting, reliable performance



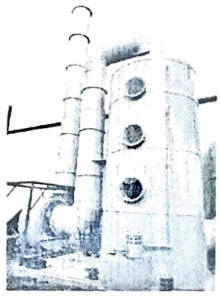
13

Wet Scrubber

High Efficient Particle Capture: Utilizing liquid based scrubbing technology, this deduster provides superior capture efficiency for both particulate matter and gaseous pollutants, exceeding industry norms for emission control. Ensuring smoke free chimney on all Biomass and Coal fuels.

Multi-Stage Scrubbing System: Designed with multi-stage scrubbing process, this s unit delivers optimal cleaning performance while minimizing water and chemical consumption

Corrosion-Resistant Construction: Crafter from materials those are highly resistant to corrosive elements and high temperatures, ensuring durability and long-term reliability in industrial settings.



ANNEXURE XIX

WASTEWATER FLOWCHART

PHARMAGEN LIMITID

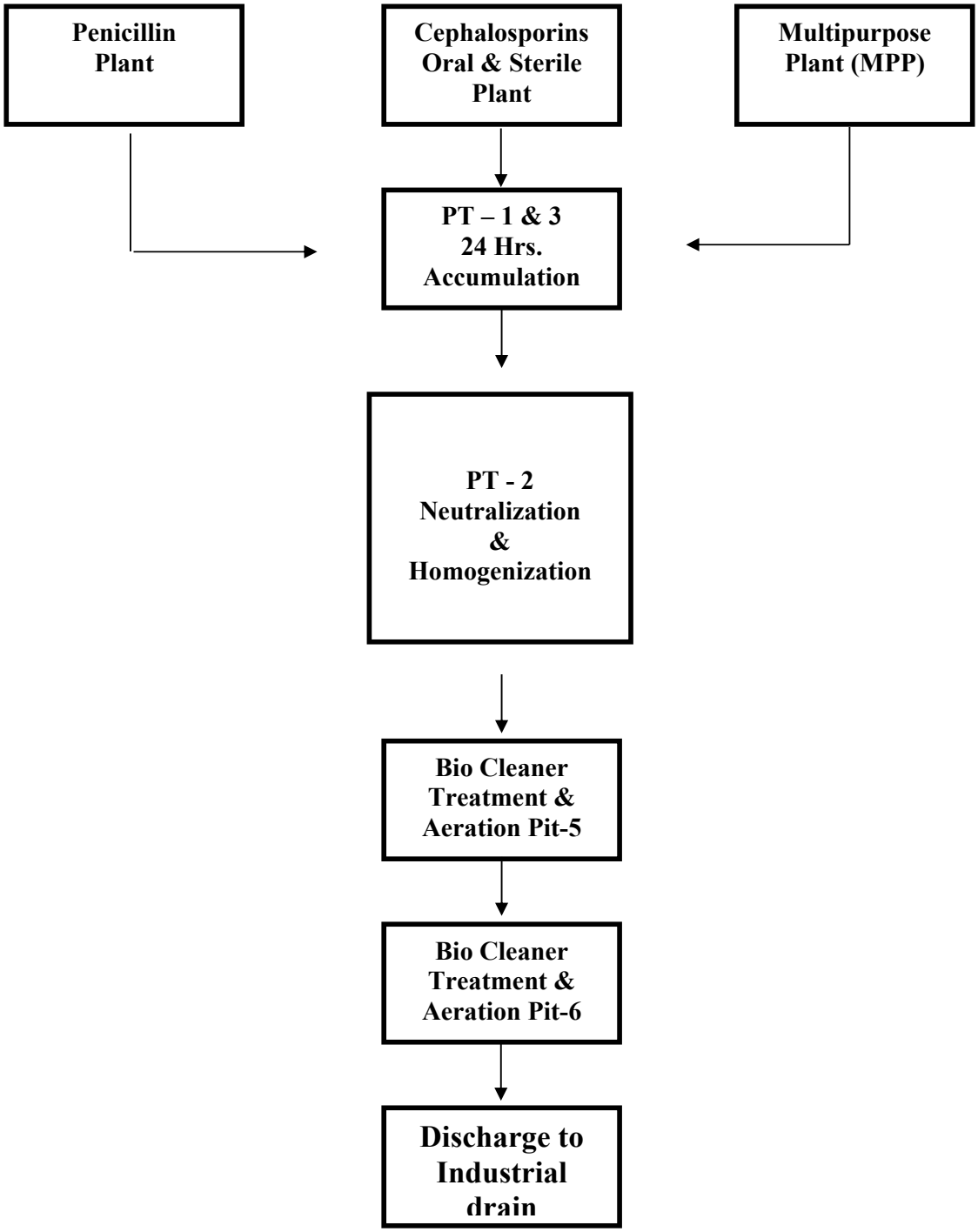
WWTP PROCESS FLOW DIAGRAM

Process Flow Diagram

Effluent Treatment Plant

Treatment Capacity (Existing) 100000 L/Day

Treatment Capacity (Future plan) 150000 L/Day



Current average waste water treatment daily
= 60000 to 70000 litre / Day