EXECUTIVE SUMMARY

This document of Environmental Impact Assessment is formulated for the "Extension of the processing unit (dyeing, printing, screen printing) and effluent treatment plant by Beacon Impex Pvt Ltd situated at 35-km Sheikhupura Faisalabad road, Faisalabad". Dyeing, printing, and screen printing are techniques used in the textile industry to add color and design to fabric. Dyeing involves the use of chemical or natural dyes to color the fabric, while printing and screen printing use a variety of techniques to apply designs to the fabric. The process of dyeing and printing involves the use of large amounts of water and chemicals, which can result in wastewater that contains pollutants. To mitigate this, the textile industry has implemented Effluent Treatment Plants (ETPs) to treat and purify the wastewater before it is released into the environment. ETPs use various physical, chemical, and biological processes to remove pollutants from wastewater, including organic and inorganic compounds, heavy metals, and dyes. The treated water can then be safely discharged or reused for other purposes. Implementing ETPs is a critical step for the textile industry to minimize its environmental impact and ensure sustainable production practices. Environmental Impact Assessment (EIA) report the project has been conducted in accordance with the Punjab Environmental Protection (Amendment) Act 2012 and IEE/EIA Regulations 2000.

➢ Salient features of project:

Sr. No.	CONSTITUENT	DESCRIPTION
1)	**Title of Project**	Extension of the processing unit (dyeing, printing, screen printing) and effluent treatment plant by Beacon Impex Pvt Ltd situated at 35-km Sheikhupura Faisalabad road, Faisalabad
2)	**Project Location:**	Situated at 35 km Sheikhupura Faisalabad Road, Faisalabad
3)	**Project Overview:**	The proposed project is an "Extension of the processing unit (dyeing, printing, screen printing) and effluent treatment plant by Beacon Impex Pvt Ltd situated at 35-km Sheikhupura Faisalabad road, Faisalabad". The subject project falls in category II B (Manufacturing and Processing) (6) (Textile units comprising of dyeing & Printing) of Schedule II, any other project for which filling of an EIA is

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		required by the Federal Agency under sub-regulation (2) of Regulation 5, of PEPA, Regulation,2000 requiring EIA. Further required to full fill the legal requirements of section 12 of the PEP Act 1997 (Amended 2022).
4)	**Project Proponent & Contact Person**	Barkat Ali S/O Khurshid Ahmed R/O Canal Road, House no P-617, Block K, Wapda City, Faisalabad
5)	**Total Area:**	132 Kanal Approximately
6)	**Total Project Cost**	PKR 110 million PKR
8)	**Production Process** **(Processing Unit.)**	Extension of the processing unit (dyeing, printing, screen printing) and effluent treatment plant by Beacon Impex Pvt Ltd situated at 35-km Sheikhupura Faisalabad road, Faisalabad **Dyeing Process:** It starts with fabric preparation, which involves washing the fabric to remove any dirt, oil, or sizing that may be present. Next, the fabric is dyed by immersing it in a solution containing the desired dye for a specific period. **Printing Process Flow** Printing is the process of applying a design or pattern onto the fabric using a printing machine. This can be done by creating a stencil or a digital image, and the ink is applied to the fabric through the stencil or digital image **Screen Printing Process Flow** Screen printing, on the other hand, uses a mesh screen to apply ink onto the fabric. After the dyeing, printing, or screen-printing process is complete, the fabric is washed to remove any excess dye or ink, dried, and finished to give it the desired texture and appearance

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		Design Preparation ↓ Screen Preparation ↓ Fabric Preparation ↓ Screen Printing ↓ Drying and Fixation **Effluent Treatment Plant Process Flow** Water Collection ↓ Screening ↓ Primary Treatment ↓ Secondary Treatment ↓ Sludge Treatment ↓ Disposal
Environmental Precise		
1)	**Project Environmental Consultant**	Entertech Labs Pvt Ltd (Environment Division) 114 E Nawab Town, Raiwind Road, Lahore. Phone: +92 423 2326882, +92 334-9776233, Email: Waqas.ahmed@iesolutions.pk
2)	**Water Requirement**	Water Requirement of proposed project is about 08 gallons per capita per day of water will be required for the workers. Domestic Water will be used for the proposed project. 150 m^3/Day is used in operational phase of the process.
3)	**Electricity Requirement**	The design criterion for the electrical works will be in compliance with the requirements of WAPDA. Maintenance will be carried out by the management of the Industry, Tehsil & District Faisalabad
4)	**Solid Waste**	Solid waste will primarily consist of the domestic solid waste

	Management	from the project. About 500 kg to 1,000 kg per day of domestic solid waste will be generated from the project. The garbage will be collected at a designated area within the area as an intermediate garbage disposal. From this place, garbage will be collected and transported to a suitable location for final disposal. The location for this final disposal will be decided in consultation with the City Faisalabad.
5)	**Tree Plantation**	Trees will be planted in all open spaces and boundary of the Project Area. Green belts will also be developed

➢ Major impacts and recommended for mitigation measures:

The construction of the project can create some adverse impact on the existing environment. The acoustic impacts, dust emission, traffic congestion, safety and sanitation during the construction period would be limited to construction of building and site preparation. Since the new building would be set up in existing project premises, the resettlement won't be an issue here. During construction, the contractor will adopt all necessary measures to reduce the probable environmental impacts from different aspects. There are minimal impacts during operation period and industry will be responsible to take necessary steps during operation. The significant impacts in different phases i.e. (i) due to project location and preparation, (ii) construction phase and (ii) operation phase have been identified using the checklist process. From this process, the main potential environmental impacts, which may arise due to construction, can be grouped as follows: (i) Atmospheric emissions and Air quality, (ii) Noise generation, (iii) Water pollution and wastewater disposal, and (iv) Health and safety However, the magnitude of these impact shall be very low and insignificant.

➢ Environmental Impact and Mitigation Measure during Construction Phase

Activity	**Environmental Impact**	**Mitigation Measure**
Construction Phase Construction of building including Site Preparation,	• Change in existing profile and drainage pattern of the land • Loss of agricultural land due to land acquisition for industrial development • Generation of solid waste in the	• Proper drainage facilities will be provided along the roads. • Appropriate measures like green areas plantation would be undertaken.

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	form of construction • Impact on the local water source due to use of construction water • Water pollution due to sediment load in construction water and wastewater from construction camps • Dust, noise and gaseous pollution from construction equipment and traffic • Dust pollution due to excavation, backfilling and concreting, hauling and dumping of earth materials and construction spoils	• The quantity of earth generated from cutting shall be used as filling material during site development. • The construction activities/erosion would be limited to possible smallest area. • Control of quality of construction wastewater within the construction site through suitable drainage system with traps for arresting the sediment load for its proposed disposal into the main natural drainage system around the site • Proper and prior planning and appropriate sequencing and scheduling of all major construction activities

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Operational Phase During operational phase solid waste management, wastewater mitigations	• Disposal of domestic solid wastes Disposal of sewage • Demand of water for domestic consumption • Air pollution due to vehicular emission • Noise pollution due to traffic noise • Demand for additional resources like water and electricity	• The development shall be mitigated by appropriate measures such that all emissions are in compliance with the air emission standards promulgated under the Environment Protection Act. • The solid waste must be managed on regular basis. • Limit water withdrawal to the amount that will not adversely affect the groundwater balance • And the demand of the local community, by developing and conserving own source of water. • - Make use of construction materials coming from authorized quarry site, • Contribute to the rehabilitation of quarry site,

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

➢ Brief Outline of Proposal

The Project is named as "Extension of the processing unit (dyeing, printing, screen printing) and effluent treatment plant by Beacon Impex Pvt Ltd situated at 35-km Sheikhupura Faisalabad road, Faisalabad. Processing mills are significant for textile industries as they transfigure fiber into yarn and yarn into fabric. Dyeing is the process of imparting color to textile materials such as fibers, yarns, fabrics, and garments. It is a complex process that involves a series of steps, including preparation of the fabric, preparation of the dye solution, and application of the dye to the fabric. Printing is the process of applying a design or pattern to a fabric using various methods, such as screen printing, digital printing, block printing, or roller printing. An effluent treatment plant (ETP) is a wastewater treatment system

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designed to treat industrial effluents and remove pollutants before discharging the treated water into the environment.

➢ Proposed Monitoring:

Monitoring at the proposed site has been conducted for:

- Air Environment (Meteorology, Ambient Air Quality, Noise Levels, Traffic Pattern, etc.)
- Water Environment (Quality, and Quantity of all potential water sources: Surface and Groundwater)
- Ecological Environment (Terrestrial and Aquatic Flora & Fauna)
- Socio-Economic Environment (Demographic profile, Occupational structure, educational status, literacy status, etc.)

➢ Environmental Management Plan & Proposed Monitoring

Environmental impact of a project is worked out using various factors and parameters, so that an Environmental Management Plan can be evolved to take mitigation measures, wherever these might be considered necessary in order of appropriateness of elimination, reduction and compensation as the goals. The development of the EMP is to make some person responsible for implementing the mitigation measures as identified so that smooth implementation of the mitigation measures can be assured. Monitoring plans have also been included to ensure the compliance of the EMP by contractors and other responsible authorities.

➢ Conclusion and Recommendation

The Environmental Impact Assessment contains 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. While the objectives of this study have been to describe the project and its environmental impact, it also identifies adverse environmental factors associated with the project. Appropriate mitigation measures as explained in the environmental study should reduce, if not eliminate, these impacts so that these are within acceptable limits. It is further concluded that all potential environmental concerns associated with the project have been adequately addressed, and no further study is required in this context.

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Chapter # 01

Introduction

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

Extension of the processing unit (dyeing, printing, screen printing) and effluent treatment plant by Beacon Impex Pvt Ltd situated at 35-km Sheikhupura Faisalabad road, Faisalabad. The purpose of this Environmental impact Assessment (EIA) guideline is to provide clear and concise information to all stakeholders (Proponents, Consultants, Government Ministries, Departments and Agencies, Members of the Public, Expert in relevant disciplines and interested groups, the organized private sector, non-governmental organizations, professional bodies, host and project affected communities) to improve and streamline the EIA study carried out for textile Processing unit. This guideline will also assist stakeholders to identify the environmental issues, mitigation measures and alternatives that need to be assessed and considered during the study.

1.1 Purpose of the report

Environmental Impact Assessment (EIA) report is being submitted to the Environmental Protection Agency (EPA), Government of the Punjab, in compliance with the legal requirement for Punjab Environment Protection Act-1997 (Amended 2022), Section 12- for obtaining No Objection Certificate (NOC) before starting and construction activity at the project site. The other relevant regulations and guidelines considered while preparing this EIA report

The other relevant regulations and guidelines considered while preparing this EIA report include:

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

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

1.2 Identification of project and proponent

Project: Extension of the processing unit (dyeing, printing, screen printing) and effluent treatment plant by Beacon Impex Pvt Ltd situated 35-km Sheikhupura Faisalabad road, Faisalabad.

Proponent: Barkat Ali S/O Khurshid Ahmed R/O Canal Road, House no P-617, Block K, Wapda City, Faisalabad.

1.3 Scope of study

The scope of the EIA Study includes collection and scrutinizing of data related to physical, biological and socio-economic environment of the project area and to prepare the baseline environmental profile. It also aims at the identification, prediction and evaluation of the possible environmental impacts of the proposed Project on its immediate surroundings on both short and long-term basis. Based on the nature and levels of those impacts, appropriate mitigation measures along with the cost have been incorporated in this EIA Report. This report will be submitted to Pakistan Environmental Protection Agency (Pak-EPA) for approval.

1.4 Objective of Study

The overall objective of this EIA is to carry out a detailed environmental assessment of the project area; to assess impacts caused by the different activities of the proposed project and to address measures to mitigate adverse environmental impacts arising from the execution of the proposed project.

The specific objectives of the EIA Study are as follows:

- To determine pre-project state of affairs to assess post-project conditions if they have changed for better or worse
- Documentation of all the resources likely to be affected due to the implementation of the proposed project

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- To provide maximum information to the proponent and other stakeholders about the existing environmental conditions and the implications of the proposed project
- Allow the Planners to minimize potential impacts of the proposed project on different environmental conditions such as physical environment, biological environment and socio-economic environment
- To facilitate decision makers to take informed decisions.

1.5 Requirement of EIA Study for the Proposed Project

The development projects bring about changes, both positive and negative, in the environmental and 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. For the last four decades, this aspect has gained a momentum both at official and public level. As a result of this, official regulations and laws have been promulgated for the protection and conservation of the physical, biological and social environment. The law makes it mandatory to carry out environmental assessment studies before commencement of construction activities of any project. EIA is mandatory according to the Pakistan Environmental Protection Act (PEPA1997) Section 12 (1) of the PEPA-1997, which states that:

"No proponent of a Project shall commence construction or operation unless he has filed with the Federal Agency an initial environmental examination or, where the Project is likely to cause an adverse environmental effect, an environmental impact assessment, and has obtained approval from the Federal Agency in respect thereof."

According to Pakistan Environmental protection Agency (Review of IEE and EIA) Regulations 2000, the proposed project falls under category II B (6) of Schedule II, which requires EIA before commencement of construction. In addition, the projects with total cost of 90 million rupees and above qualify for an EIA.

1.6 Scope of Services and Approach to Carry Out the Study

The Terms of references stipulated following major objectives of this study i.e.

- Identify adverse environmental and social impacts associated with various project components and phases of project implementation.
- Describe baseline environmental and social conditions of the whole project corridor.
- Identification of environmental and social impact of the project and suggest mitigation measures.

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- To assess and establish the existing environmental and socioeconomic conditions in the Project area.
- To implement and execute environmental safeguards considering the harmful effects due to the Project.
- To propose mitigation and monitoring measures that can be incorporated into the design of the Project to remove or reduce the damaging effects of various factors, as far as possible, and to control and monitor, residual factors. To facilitate environmental decision making.
- To facilitate an appropriate follow up process with requirements for monitoring, management, audit and evaluation.
- To assess the proposed activities and to ensure that they comply with the relevant environmental and social regulations and standards.
- Describe the governing national and international laws & regulatory framework on environment and institutional arrangements.
- Prepare Environmental Management Plan (EMP) and Environmental Costs etc.
- To prepare an EIA report as per the relevant guidelines for submitted to the Provincial Environment Protection Department.
- Specific Tasks for the Study Team
- Based upon the available information, a set of tasks has been conceptualized for the Project viz.

1.7 Specific Tasks for the Study Team

Task 1: Examination and analysis of relevant environmental regulations

Task 2: Initial consultations with the relevant agencies and stakeholders

Task 3: Description of the Project and alternatives

Task 4: Description of the Environment

Task 5: Prediction and Evaluation of the impacts

Task 6: Institutional and legal aspects

Task 7: Environmental Management Action Plan

Task 8: Consultation with stakeholders

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1.8 Detail of Consultant

The services of environmental consultant Entertech Labs Pvt Ltd (Environment Division) have been taken by the proponent for the formulation of Report. It is an environmental consultancy firm that has an unrivalled reputation for providing high quality tailored services. Entertech Labs Pvt Ltd (Environment Division) is a dynamic, responsive and innovative in providing this cost-effective solution. Entertech Labs Pvt Ltd (Environment Division) comprising of Environmental Engineers & Consultants and rendering their services to clients in both industrial and the government sectors.

With the visionary leadership of its veteran management and enthusiasm of its team, it is committed to come up with innovative ways of maintaining and enriching the Environmental Profiles / Portfolios of its prestigious clients with activities having a strong and lasting impact to their corporate image. It has attracted and retained staff with an unrivalled depth and breadth of expertise and experience that they have from working, not just in consultancy but also in commercial, industrial and regulatory environments. With its pool of Environmental Consultants, Environmental Scientists and Environmental Engineers, company offers one stop solutions tailored to its client's needs.

CONTACT DETAILS:

Qualified professionals with relevant experiences of conducting environmental assessment have contributed to the preparation of EIA Report. The team has been shown in Table below:

Table 1.1: List of Team Members

Sr. #	**Name**	**Highest Qualification**
	Mr. Waqas Ahmad Khan	M.Phil. Environmental sciences
Members		
	Muhammad Ali Shahid	M.Phil. Environmental sciences, GIS Expert, PGD in Environmental Law (Pu)
	Mr. Abdul Rehman	MPhil Environmental Sciences (UOL)
	Bilawal Zafar	BS(Hons) Environmental Sciences (UOL)
	Fajar Waheed	BS(Hons) Environmental Sciences (UOL)

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	Usama Bin Zaffurallah	BE Energy and Environment Engineering

1.9 Nature, Size and Location of Project

Keep in view the design, construction and operation phases of the project along with potential impacts generated during the course of the project, the proposed plan is subjected to fall under the such categories of the projects that requiring EIA as per Pakistan Environmental Protection Agency (PAK-EPA) (2000) regulations.

The proposed project is "Extension of the processing unit (dyeing, printing, screen printing) and effluent treatment plant by Beacon Impex Pvt Ltd situated at 35-km Sheikhupura Faisalabad road, Faisalabad". This guideline will also assist stakeholders to identify the environmental issues, mitigation measures and alternatives that need to be assessed and considered during the study. The proposed project is Extension of the processing unit (dyeing, printing, screen printing) and effluent treatment plant by Beacon Impex Pvt Ltd situated at 35-km Sheikhupura Faisalabad road, Faisalabad Occupied a Total area of 132 Kanal.

Location

M/S Beacon Impex Pvt Ltd situated at 35-km Sheikhupura Faisalabad road, Faisalabad. The land co-ordinates of the project site are as follows:

East…….. Road

West……..…Open Land

North……. Industrial Unit

South……. Industrial Unit

Spatial and Temporal Boundaries of the Assessment

Temporal and spatial boundaries for the effects assessment are defined by the characteristics of the project and the VECC being assessed. These boundaries encompass time periods and areas during and within which the VECCs are likely to interact with or be influenced by the project. Spatial boundaries vary according to the nature of the VECC but generally are defined in terms of:

The definition of the RSA may take into consideration factors such as:

- Habitat for sensitive life stages;

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- Wildlife migration routes and ranges;
- Areas of potential effects from dispersed or intermittent project activities, such as, air transport, and road haul; and
- Areas within which there is potential for cumulative effects with other projects.

Temporal boundaries for project-related effects are defined in terms of the project phases:

Baseline – covers ecological, physical and human-related characteristics of the environment, as characterized in 2021, 2022 and 20223, prior to the initiation of the construction phase.

Construction – includes all activities associated with project construction and before commencement of processing (mill start-up) such as:

- Transportation corridors construction;
- Mobilization of equipment and supplies to the site by road and air;
- Construction of site facilities, including camp, infrastructure, ore stockpile, mill, waste rock storage dump, TWRMF, water management facilities (diversions, settling ponds, seepage collectors etc.)
- Camp operations and personnel transport during construction;

Decommissioning – includes all activities to decommission site facilities and remove equipment and materials from the site, recontour the site and restore drainage patterns to stable long-term conditions, stabilize the wastes (waste rock) for safe long-term maintenance, and implement the final site reclamation procedures to prevent erosion and restore vegetation cover where feasible;

Closure – refers to conditions that will exist on the site after the site is abandoned and revegetation is complete.

Temporal boundaries are also defined for the cumulative effects assessment, spanning baseline to a point in the future, within which project effects on VECCs are predicted to overlap with effects of other projects or activities. Spatial and temporal boundaries for each VECC are detailed in respective report sections.

Important Issues and Concerns raised during consultation.

Issue	Aspect/Concern raised by Stakeholders	Project Proponent Commitments

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Employment Opportunities	Expectations of employment are very high. Job opportunities are less for herders as they generally have less skills and training.	Employment is the main priority of the industry. Mostly locally skill and unskilled labor will be prioritized and also there will be job in executive level. Around 100 people will be employed by the industry.
Training Opportunities	People are keen to consult with subject industry if the Project offers training and upgrading opportunities to enhance their trade or professional skills.	Development of the Training Strategy, including commitment of allocation of budget investment for training infrastructure, delivery and design. Installation of training facilities in for worker of the company and students will also be accommodating. The internship program will offer to the students to develop professional skills.
Health & safety	Truck traffic is a main concern because the road used by the Project passes through a number of small communities and different industries and there will be a high volume of trucks transporting concentrate.	Development of Transport Management Plan including traffic safety training. Traffic advisory signs will be installed along project site and all nearby specific areas.
Local economy and business development	Local service providers are keen to participate in providing services to provide raw material and expect to receive in order to adjust their businesses to meet specific needs. Local/regional companies and entrepreneurs have limited understanding about meeting the high volumes required by the Project and the quality standard, but are keen to know these requirements so they can become suppliers.	Proponent has main focus that they will all the material regarding construction and plant operation to buy from the local market. This will help the local and small business and to people who are keen interested to become suppliers.
Environmental Issues	Dust and noise impacts, particularly from the construction activities and in operation of mechanically unfit machines, are of concern to herders and other residents. Environmental degradation during road construction and use. Loss and change of vegetation due to soil degradation.	Implementation of controls under the Environmental Management Plans, including on and off-site dust and noise monitoring. A Participatory Environmental Monitoring Program will be launched to spread awareness.

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

Significance Impact

The construction of the project can create some adverse impact on the existing environment. The acoustic impacts, dust emission, traffic congestion, safety and sanitation during the construction period would be limited to construction of building and site preparation. During construction, the contractor will adopt all necessary measures to reduce the probable environmental impacts from different aspects. There are minimal impacts during operation period and Construction will be responsible to take necessary steps during operation. The significant impacts in different phases i.e. (i) due to project location and preparation, (ii) construction phase and (ii) operation phase have been identified using the checklist process. From this process, the main potential environmental impacts, which may arise due to construction, can be grouped as follows: (i) Atmospheric emissions and Air quality, (ii) Noise generation, (iii) Water pollution and wastewater disposal, and (iv) Health and safety However, the magnitude of these impact shall be very low and insignificant.

1.10 Field Visit

The consultant team visited the Project site and adjoining areas frequently to collect baseline data and investigate physical, biological, and socioeconomic resources. In addition, meetings were held with the stakeholders and community members in the Project area to collect primary information about the Project and record their views and concerns regarding the proposed project.

The rapid Social Appraisal methodology was applied to discover the facts (empirically verifiable observations or verifying the old facts) on the prevailing socio-economic and cultural conditions of the Project area. Various aspects of the physical environment probed during the survey.

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1.11 Policy, Legal and Administrative Framework

This section comprises policy, guidelines, statutory obligations and roles of institutions concerning EIA study of the proposed project.

The objective of the review of legal and administrative framework is to obtain information on all legislation pertaining to the Project development. The Consultant Experts reviewed the environmental policies, national, international and provincial laws and guidelines relevant to the Project. A synopsis of all relevant laws is included in the Report.

1.12 Identification of Impacts

The impacts have been identified for the methodical consideration of likely or possible significant impacts on the environment because of construction and operational activities. The aim of this task was to assess the associated risks with these impacts. The identification of impacts is a key activity in the environmental assessment process, which is based on the professional judgment of team's experience supported by national and international guidelines.

1.13 Evaluation of Impacts

Each impact identified has been evaluated against its significance in the terms of its severity and likelihood of its occurrence. The impact evaluation process was carried out to prioritize each potential impact and screen out insignificant or inconsequential impacts. The significance of the impacts has been assessed in terms of the effects on the natural ecosystem, level of public concern and conformity with legislative or statutory requirements. The assessment of the severity was to consider the nature, magnitude, extent and location, timing and duration and reversibility of the potential impact. The evaluation of the significant impacts will outline the basis for development of environmental mitigation and monitoring program.

1.14 Identification of Mitigation Measures

The objective of identification of mitigation measures is to identify practices, technologies or activities that would prevent or minimize all significant negative environmental impacts and propose physical and procedural controls to ensure that mitigation is effective. On the basis of the impact evaluation performed, changes or improved practices have been suggested, where practical, in the planned activities, to prevent and control unacceptable adverse impacts resulting from normal or extreme events.

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Monitoring requirements have been defined and institutional arrangements for monitoring have been suggested.

1.15 Development of Environmental Management Plan and Environmental Monitoring Plan

An Environmental Management Plan (EMP) has been developed for effective implementation of the recommended mitigation measures. The EMP includes controls to minimize the identified impacts, and monitoring program to monitor residual impacts, if any, during the operation. The EMP also describes procedures to be followed during the operation of the Project and identify roles and responsibilities of all concerned personnel, including reporting in the operational phase. Together with Environmental Management Plan, an Environmental Monitoring Plan has been framed to ensure that all the corrective actions to counter the adverse environmental impacts have been taken.

Alternatives Considered, and Reasons for their Rejection

Alternatives sites were identified initially for the proposed project. These sites were also located in district Faisalabad the present site has been selected after consideration of the other two alternative sites. These sites and their reasons of rejection are summarized below:

Design/technology alternatives, their selection and rejection criteria

The proposed Extension of the processing unit (dyeing, printing, screen printing) and effluent treatment plant by Beacon Impex Pvt ltd situated 35-km Sheikhupura Faisalabad road, Faisalabad. The site is suitable enough for the construction.

Environmental Alternatives, their selection and rejection criteria

The proposed Extension of the processing unit (dyeing, printing, screen printing) and effluent treatment plant by Beacon Impex Pvt ltd situated 35-km Sheikhupura Faisalabad road, Faisalabad. This selected site is environmentally friendly and sustainable. There is no specie present that will be harm due to Project. Hence, there is no environmentally alternative considered for this specific project.

Economic Alternatives, their selection and rejection criteria

The current selected mythology, designing and technique is economically efficient and provides extensive job creation avenues. It refers to the shift of materials used in the proposed project towards environmentally friendly and sustainable materials in present case. All machinery, equipment and

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materials procured for the said project will be environmentally friendly and sustainable. Hence, there is no material alternative considered in this case.

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Chapter # 02

Project Description

2.1 General

Textiles industry has around 4.5 crore employed workers including 35.22 lakh handloom workers across the country. The domestic textiles and apparel market stood at an estimated US$ 100 billion in FY19.

The global demand for the Textile Yarn Market was valued at USD 11.9 Billion in 2019 is expected to reach USD 16.0 Billion in 2026 and is anticipated to grow at a CAGR of 4.0% Textile is one of the basic needs of human population. Textile industry is witnessing huge demands in Asia Pacific regions due to population explosion. The adoption of new trends globally and introduction of new fabrics are some of the major factors driving demand for textile yarns.

A continuous length of long interlocked fibers is known as yarn; it used in the various process of the textiles production such as weaving, sewing, embroidery, rope making, knitting, and crocheting. The thread is kind of textile yarn specially intended for sewing by machine or hand.

Embroidery threads are also the type of textile yarns, which is designed for a machine, or hand embroidery. The textile yarn is made up of numerous synthetic or natural fibers. Natural fibers are little elastic and extremely breathable. Cotton is the most common plant fiber, while synthetic fibers come in the three forms such as a filament, staple, and tow. Filament and spun are basic types of the textile yarn.

Rapid growth in the urbanization and increasing requirement of the industries are the major factors that anticipate driving the market growth. The shift in consumer preference towards affordable and comfortable clothing increases the demand for high-value fabrics

Blended varieties of fibers are also taking immense growth in the market owing to significant features of both artificial and natural yarn thus opening up new growth opportunities in the coming years. However, instability in the production of plant and animal source yarn and the

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strict regulation that is imposed on the trade of textile yarn products restraints the global textile yarn market to some extent.

Objective of the Project

Pakistan is the 4th largest producer of cotton with the third largest spinning capacity in Asia after China and India and contributes 5% to the global spinning capacity. Spinning mills are significant for textile industries as they transfigure fiber into yarn and yarn into fabric. Spinning process is an initial step to produce textile layout such as garments, fabric, home textile and so on. People used to convert fibers into yarn i.e., the spinning process by hand before a couple of decades which has now been mostly replaced by advanced technology of mechanical spinning carried in textile mills.

2.2 Type and category of the project

The project is based on Extension of the processing unit (dyeing, printing, screen printing) and effluent treatment plant by Beacon Impex Pvt ltd situated 35-km Sheikhupura Faisalabad road, Faisalabad. The subject project falls in the category II B (6) of Schedule II, any other project for which filing of an EIA is required by the Federal Agency under sub-regulation (2) of Regulation 5, of PEPA, Regulation,2000 requiring EIA. Further the client is required to full fill the legal requirements of section 12 of the PEP Act 1997 (Amended 2022).

2.3 Current status of the project

As proponent is seeking for Environmental Approval so they can start their construction on immediate basis. No activity is performed in the premises till the approval of the Environmental NOC.

2.4 Project Justification

A proponent shall provide necessary and adequate information on the justification for the project. This shall include a summary of the report of the Project's feasibility study; the need, value and sustainability (social, cultural and economic) of the Project. Such justification shall expressly define the benefits of the project to its intended end-users and indicate the over-riding advantages or positive impact of the project over its anticipated environmental impacts. The justification may also include the rationale for selecting the project amongst

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various available options or alternatives and any socioeconomic factor is justifying the project.

2.5 Alternatives Considered, and Reasons for their Rejection

Alternatives sites were identified initially for the proposed project. These sites were also located in district Faisalabad the present site has been selected after consideration of the other two alternative sites. These sites and their reasons of rejection are summarized below:

2.5.1 Alternative site

Figure 1 Alternative site location

2.5.2 Reasons of Rejection

The reasons of rejection of this site are:

- Agriculture land
- Underground water was deep and not easy to extract. Ground water quality was not good.
- Nearest to residential area
- Security threat was present
- Wastewater disposal drain was not existing

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Selected Site:

- The reasons of selection of this site are:
- Availability of access roads
- Communication facilities
- Availability of electricity
- Basic infrastructure
- Sewerage system
- Approved drainage system
- Less/few vegetation/plantation
- Less fauna species at site
- Convenient plot layout
- Subject selected site surrounded by industrial area except one site which is open land

Obviously, environmentally sound, neat and clean environment are the other considerations for site selection. The project will also facilitate the people of the area with increasing the opportunity of employment and others related facilities. Keeping these requirements and their feasibility and other basic infrastructural requirements at the site, the selected site is ideally suited for M/S Beacon Impex Pvt ltd situated 35-km Sheikhupura Faisalabad road, Faisalabad. In reference to the project site alternatives, several lands were evaluated. The final selection of site is based on following criterion:

- **Accessibility:**

The site should be accessible from a permanent road to allow ready transport.

- **Water Supply:**

Availability of adequate water supply, which should also, meets drinking water standards.

- **Soil condition for civil Structure:**

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Suitability and stability of soil condition required for the civil structure.

- **Sufficient Land Availability:**

  Availability of sufficient land to design and layout plan in an appropriate manner, with consideration of future expansions.

Electricity:

Availability of electricity from the WAPDA for an uninterrupted supply of power, required for the project.

2.6 Location of project

The proposed project is M/S Beacon Impex Pvt ltd situated 35-km Sheikhupura Faisalabad road, Faisalabad., occupied an area of 132 Kanal.

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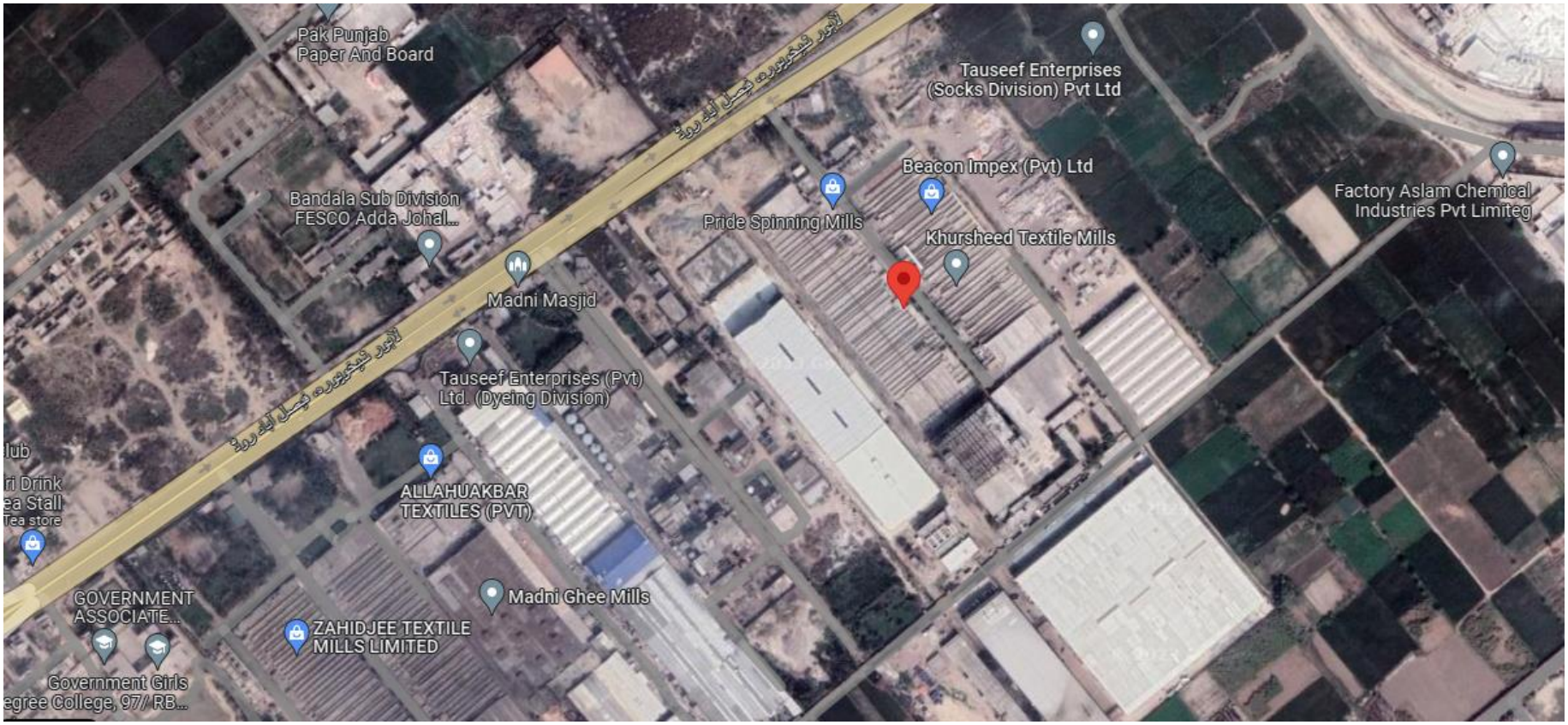

Figure 2 Google Map of Project

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2.7 Land Acquisition

M/S Beacon Impex Pvt ltd situated 35-km Sheikhupura Faisalabad road, Faisalabad., is the property of the owner. The total area of 132 Kanal. It is an open land, and no person or any kind of human being is not being displaced from the area.

Road Access

The site is easily accessible from Sheikhupura-Faisalabad Road

2.8 METHODOLOGY

2.8.1 Study Area

a) On-site assessments and interviews with relevant personnel including workers, managers, and local people.

b) Understanding the operational activities of a Spinning industry.

c) Collecting the samples from both effluent and underground water and analyzing the laboratory experimental data.

d) Preparation of EIA report from the interviews of relevant workers and local people.

e) Literature review of relevant issues and locate findings

2.9 Project Process

The project process of dyeing, printing, and screen printing involves several steps. It starts with fabric preparation, which involves washing the fabric to remove any dirt, oil, or sizing that may be present. Next, the fabric is dyed by immersing it in a solution containing the desired dye for a specific period. Printing is the process of applying a design or pattern onto the fabric using a printing machine. This can be done by creating a stencil or a digital image, and the ink is applied to the fabric through the stencil or digital image. Screen printing, on the other hand, uses a mesh screen to apply ink onto the fabric. After the dyeing, printing, or screen-printing process is complete, the fabric is washed to remove any excess dye or ink, dried, and finished to give it the desired texture and appearance. The brief process flow chart is attached as a supporting document.

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Grey Procurement
↓
Mending of Grey Fabric
↓
Fabric Preservation
↓
Assigning Lot # & Issued to Bleaching/ Concerned Department
↓
Random Inspection
↓
Stitching of Thans & Recipe formulation
↓
Singing & De-sizing
↓
Bleaching / Scouring
↓
Inspection
↓
Issued for Dyeing
↓
Dyeing
↓
Inspection
↓
Finishing / Calendaring
↓
Inspection
↓
Printing
↓
Folding
↓
100 % Fabric Checking
↓
Rolling / Bailing
↓
Stacking / Identification
↓
Dispatch

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Dyeing:

Dyeing is the process of coloring textiles or fabrics by immersing them in a solution containing a specific type of dye. Dyeing is an essential part of the textile manufacturing process, and it allows manufacturers to create a wide range of colors and patterns. The dyeing process starts with fabric preparation, which involves washing the fabric to remove any dirt, oil, or sizing that may be present. The fabric is then immersed in a solution containing the desired dye. The dye solution can be prepared using natural or synthetic dyes, and the type of dye used will depend on the desired color, the type of fabric, and the production process.

During the dyeing process, the fabric is agitated to ensure that the dye is evenly distributed. The color of the fabric can be checked periodically, and the dyeing time or temperature can be adjusted as necessary to achieve the desired color. Once the desired color is achieved, the fabric is rinsed in water to remove any excess dye. After rinsing, the fabric may undergo additional washing with detergent to remove any remaining dye. Once the fabric is washed and dried, it can be inspected for quality control, and any necessary adjustments can be made.

Printing:

Printing and screen printing are two common methods used in the textile industry to apply designs or patterns onto fabrics. Both methods involve using ink or pigment to create a desired design, but they differ in the way the ink is applied to the fabric. Printing involves applying ink to the fabric using a machine that transfers the ink onto the fabric through a stencil or a digital image. The design is created on the stencil or digital image, and the ink is applied to the fabric through the openings in the stencil or by following the digital image. The fabric is then dried, and heat set to fix the ink onto the fabric. Printing allows for a wide range of colors and detailed designs, making it a popular choice in the textile industry.

Screen printing, also known as silkscreen printing, involves using a mesh screen to apply ink onto the fabric. The design is created on the mesh screen by blocking out areas of the screen using a stencil or photo emulsion. Ink is then applied to the screen and pressed through the openings onto the fabric using a squeegee. Screen printing is ideal for larger designs and high-volume production, as it is a fast and efficient process. It also allows for vibrant colors

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and sharp details, making it a popular choice for T-shirt printing, signage, and other textile applications.

Effluent Treatment Plant:

Textile manufacturing involves the use of large amounts of water and chemicals, which can result in the generation of wastewater or effluent. This wastewater can contain various pollutants, including dyes, chemicals, and other contaminants that can be harmful to the environment and public health. To address this issue, many textile manufacturing facilities have implemented effluent treatment plants (ETPs). An effluent treatment plant is a facility designed to treat and purify wastewater generated by textile manufacturing processes before it is discharged into the environment. The ETP consists of a series of physical, chemical, and biological processes that work together to remove pollutants from the wastewater.

Once the wastewater has been treated, it can be discharged into the environment, either directly or after further treatment. The treated wastewater must meet local regulatory standards and guidelines for environmental discharge.

2.10 Vegetation features of the project

The project site has few and scattered amount of vegetation, only five trees will be cut during construction. Project site is open land that will help to avoid land clearing, mainly shrubs, weeds and grasses are present over there in scattered quantity.

2.11 Magnitude of the operation including capital cost, and associated activities

This project is of plotting for Dyeing, Printing, Screen printing units and Effluent treatment plants with all above mentioned facilities. Different plotting will be done in M/S Beacon Impex Pvt ltd situated 35-km Sheikhupura Faisalabad road, Faisalabad. Total area of the project 132 Kanal. The total cost of the subject proposed project will be 110 Million PKR for land development, plotting, planning, and construction.

2.12 Time Schedule

The planning which includes layout plan and broad scale design of industrial area, solid waste management and wastewater treatment facility area for Dyeing, Printing, Screen printing units and Effluent treatment plants by M/S Beacon Impex Pvt ltd situated 35-km

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Sheikhupura Faisalabad road, Faisalabad. M/S Beacon Impex Pvt Ltd will be completed almost 06 month after the Environmental Approval. New job opportunities will arise especially for the locals during construction.

2.13 Water Requirement:

Water Requirement of proposed project is about 08 gallons per capita per day of water will be required for the workers. Domestic Water will be used for the proposed project. 150 m3/Day is used in process.

2.14 Sources of Water

Underground water at the project site is available at the depth of 150-200 feet and source of water for the industrial process will be the tube well. According to the chemical analysis report water is fit for drinking.

2.15 Wastewater Treatment Specification:

Water Requirement of proposed project is about 08 gallons per capita per day of water will be required for the workers. Domestic Water will be used for the proposed project. 150 m^3/Day is used in process.

As According to Punjab water supply, Sewerage and Drainage Scheme

Domestic Water Consumption

Design Population	**Per Capita Consumption per day**
700-2000	**8 gallons**
2000-5000	10 gallons
5000-10000	15 gallons
10000-25000	20 gallons
10000-25000	30 gallons (with Sewerage Facilities)
25000-1 lac	40 gallons (with Sewerage Facilities)
Above 1 lac	50 gallons (with Sewerage Facilities)

Wastewater Treatment Specification

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Wastewater treatment (WWT) is a broad term that applies to any process, operation or combination of processes and operations that can reduce the objectionable property of water that carried waste and render it less dangerous.

Effluent Discharge Data

Parameters	Discharge values in mg/l
pH	7.9
COD	184
BOD	23
Ammonia as NH3	62
Total nitrogen suspended solids (TSS)	32
Phosphorus as PO4	0.18
Total nitrogen	6.4
Temperature	22oC
Total alkalinity as CaCO3	86

Critical parameters and their Limiting Discharge values after treatment

Constituent group of Parameters	Discharge values (in mg/l) after treatment of the effluent
COD	150
BOD	50
Ammonia as NH3	20
Total suspended solids (TSS)	30
Phosphorus as PO4	10
Total nitrogen	40
Temperature	40oC

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Total alkalinity as CaCO3	86

Based on the data given in the data analysis and laboratory result above a new treatment system for Ethiopian Textile industry can be suggested to reduce the environmental impact. The suggested treatment method is called wetland treatment system. Because wetland treatment systems have the following advantages over conventional treatment system:

- High removal efficiency in BOD, COD, TSS and it regulates pH.
- Low or no energy requirement.
- Have high design flexibility.
- Effective option for on-site wastewater treatment

Flow equalization: Equalization tank is the tank used to collect the effluents discharged from sizing, desizing, scouring, mercerizing, bleaching, dyeing and printing departments. The wastewater flow rates from waste generating sites vary according to

a. The type and size of the facility

b. The degree of water reuse

c. The on-site wastewater treatment methods.

Therefore, flow equalization is the process used to give equal flow rate and uniform waste load for next operations.

Neutralization: Wastewater of Textile industry has high alkaline content and contains other polluting chemicals. The alkalinity of the wastewater is neutralized (treated) at neutralization tank before entering to other treatment steps. The chemical used in neutralization process are H2SO4 or HCl.

Coagulation

It is the process whereby chemicals are added to a wastewater resulting in a reduction of the force tending to keep suspended particles apart. Chemical coagulants used for this purpose are various such as alum, iron salt, ferrous sulfate, ferric chloride and ferric sulfate. These

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chemicals are most effective when wastewater is slightly alkaline, and wastewaters of Textile industry are alkaline in nature.

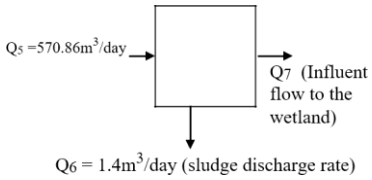
Settling tank

Settling tank is first filled with incoming wastewater from coagulation tank and can rest for a certain detention time. During this detention period, the suspended solids settle down at the bottom of the tank, at the end of the period the effluent is drown off through the outlet line.

Mass Balance and Sample Design of the Plant for the Beacon Impex Pvt Ltd

Mass balance

Settling tank:



$Q_5=Q_7+Q_6$ $Q_7 = Q_5 - Q_6$

$=570.86m^3/day - 1.4m^3/day$

$=569.46m^3/day$

Design of the Plant

Design of equalization tank

Given parameters

Flow rate of influent to equalization tank Q = 564 m3/day Taking depth of the tank, H = 2.5m Detention time, t = 3hr So, Volume of the tank required, V = Q*t

= 564m3/day*3hr*(1/24) day/hr =70.5m3

The cross-sectional area of the tank, A = Volume of tank/ Depth of tank = V/ H =70.5m3/2.5m = 28.2m2 Selecting square type equalization tank of side B,

V= B2*H 70.5m3=B2*2.5 B2= 70.5m3/2.5m

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B = 5.3m

Taking B=5m and the height 3m with additional overloading with 25% excess, the volume will be:

V= 1.25*52*3m2

= 93.75m3

Design of neutralization tank

Volume of the neutralization tank is the same as the volume of the equalization tank since the volume of the neutralizer, i.e. H2SO4, very small.

Volume of the tank = 70.5m3

The dimension of the neutralization tank is:

L=5m H=2.5m W=5m

Design of coagulation tank

i. Design parameters

a. Capacity of the tank

b. Power required

c. Paddle area required

d. Amount of Al (SO) .18 H O

The total volume of wastewater to be treated per day = 564m^3. Assume a detention period of 25min in the basin (i.e. somewhere between 10 to 30 minutes).

Therefore, Capacity of the tank = the volume of wastewater required to be treated in 25 min

=564m^3/24hr*(1hr/60min)*25min = 10m^3

According to Pnumia, et al. (Punmia, Arun and Ashok, 2005), assume G (velocity gradient) value of 50/sec (i.e. somewhere between 20 to 80/sec).

Paddle tip velocity (v) of 0.75 m/sec (i.e. somewhere between to 0.9 m/sec) and the relative velocity of paddle (vp) of 0.5 m/ sec (i.e. somewhere between 0.6 to 0.75times v). Therefore,

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the power required for agitating $10m^3$ of wastewater with its velocity assumed at 15^0C can be evaluated using equation:

$$P=G2*\mu*V$$

$$= 502*1.139*10\text{-}3*10$$

$$= 28.475Watt$$

The coefficient of drag CD for rectangular paddle = 1.8 Hence, the areas of paddles required can be computed using equation: A = 2P/(CD p Vp3) Where P = Power, CD = Coefficient of drag,p= Density, and Vp = Relative velocity of paddle. From table (In Punmia, Arun and Ashok, 2005) the value of P at 15^0C = 999.1 Kg/m^3

$$A= 2*28.47m^2/(1.8*999.1*0.513)$$

1. Dosage of alum required

a. Data adopted

Flow rate (Q) = $564m^3$/day Average normal dose of alum = 11 mg/1t Amount of alum required per day can be evaluated

$$M = 564m^3*11mg/1t*10\text{-}3 \quad M = 6.024Kg/day$$

Design of settling tank

a. Given parameter

Influent flow rate to the tank=$570.86m^3$/day Detention time=2hr High=2m

Volume of the tank are (V) = Q*t =$570.86m^3$/day*2/24day

$$=47.57m^3$$

Area of the tank is =volume of the tank/ high =V/H

$$=47.57m^3/2m =23.78m^2$$

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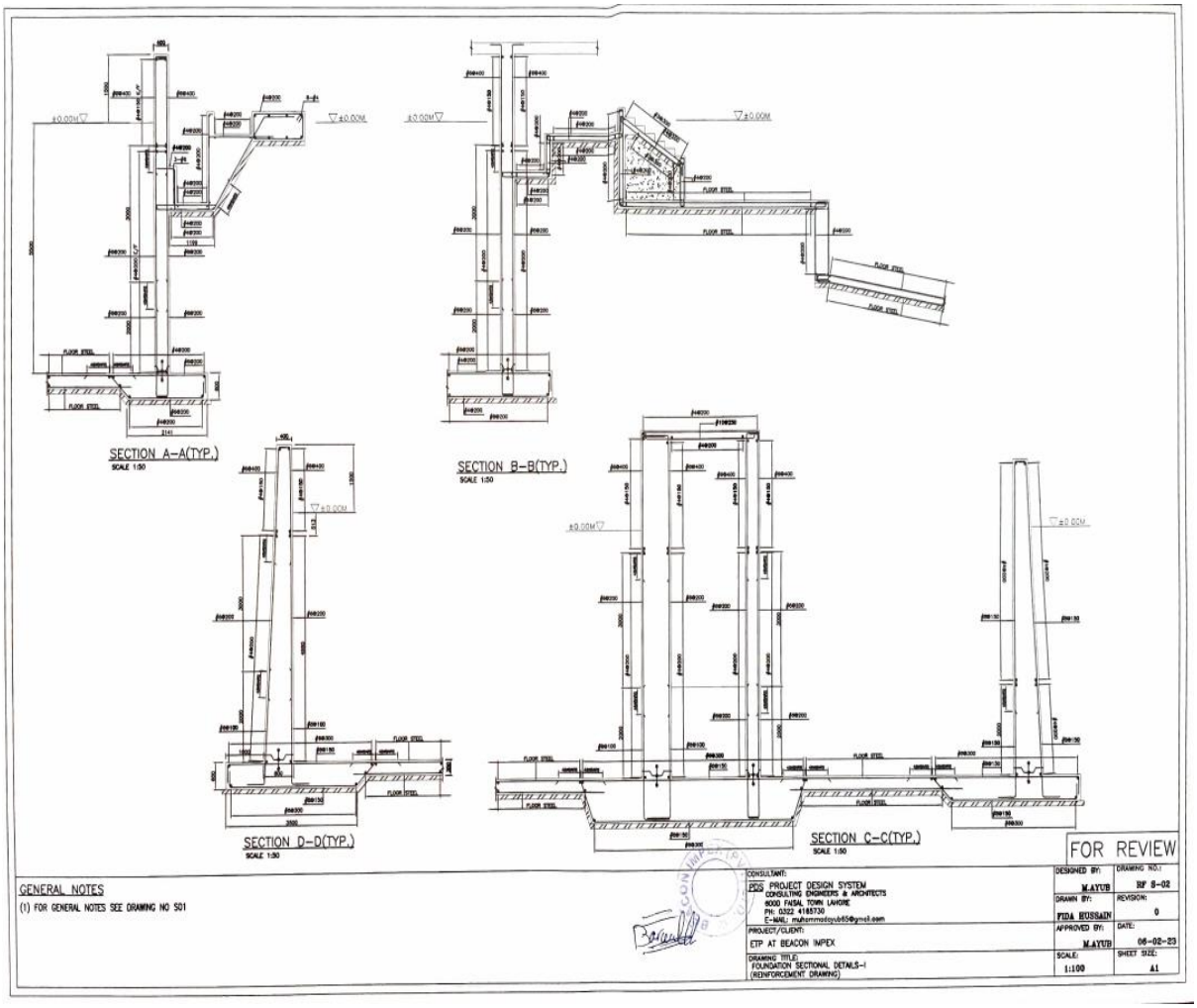
Layout Map of Effluent Treatment Plant (These Layout are also attached as supporting document).



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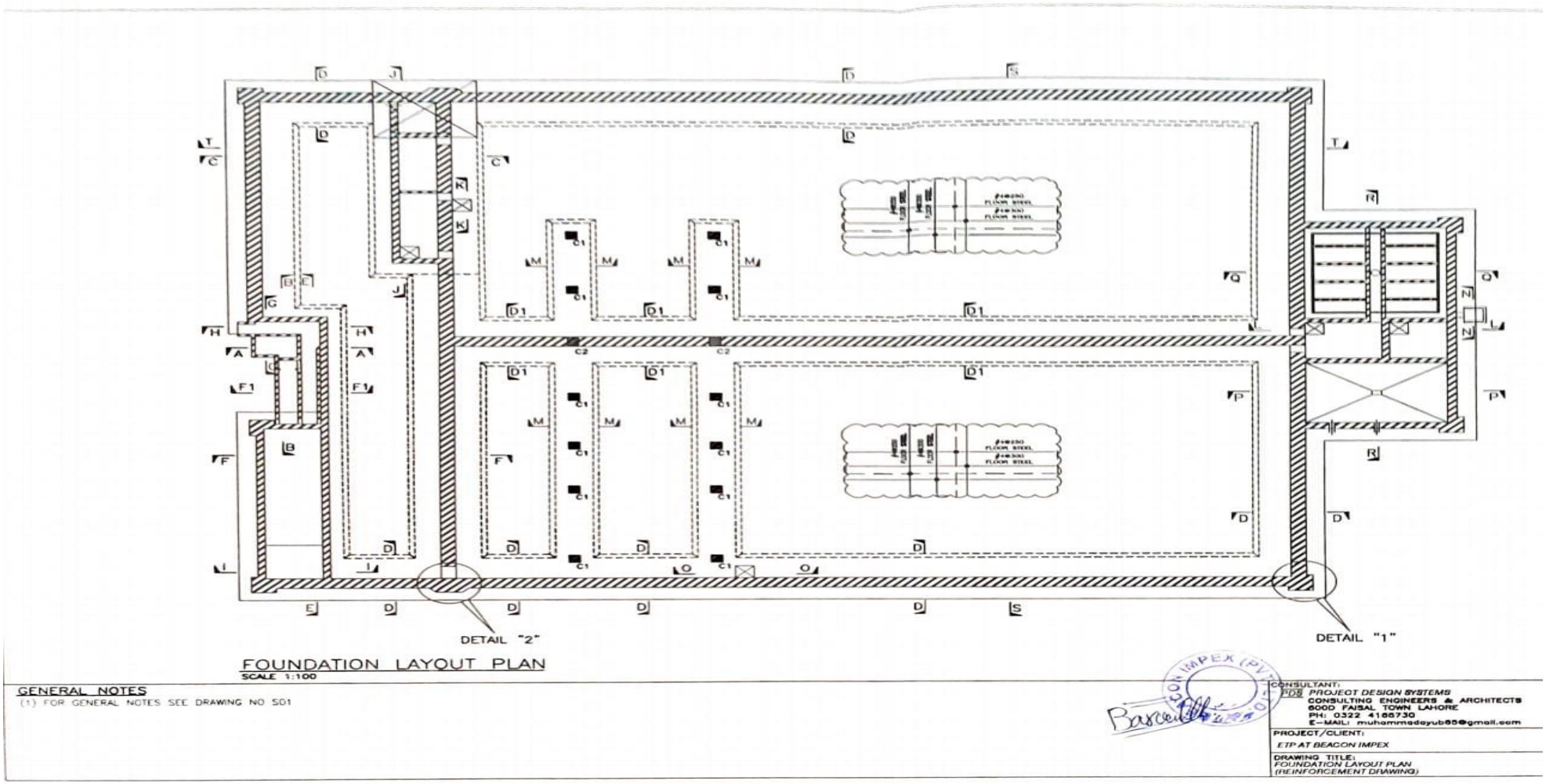

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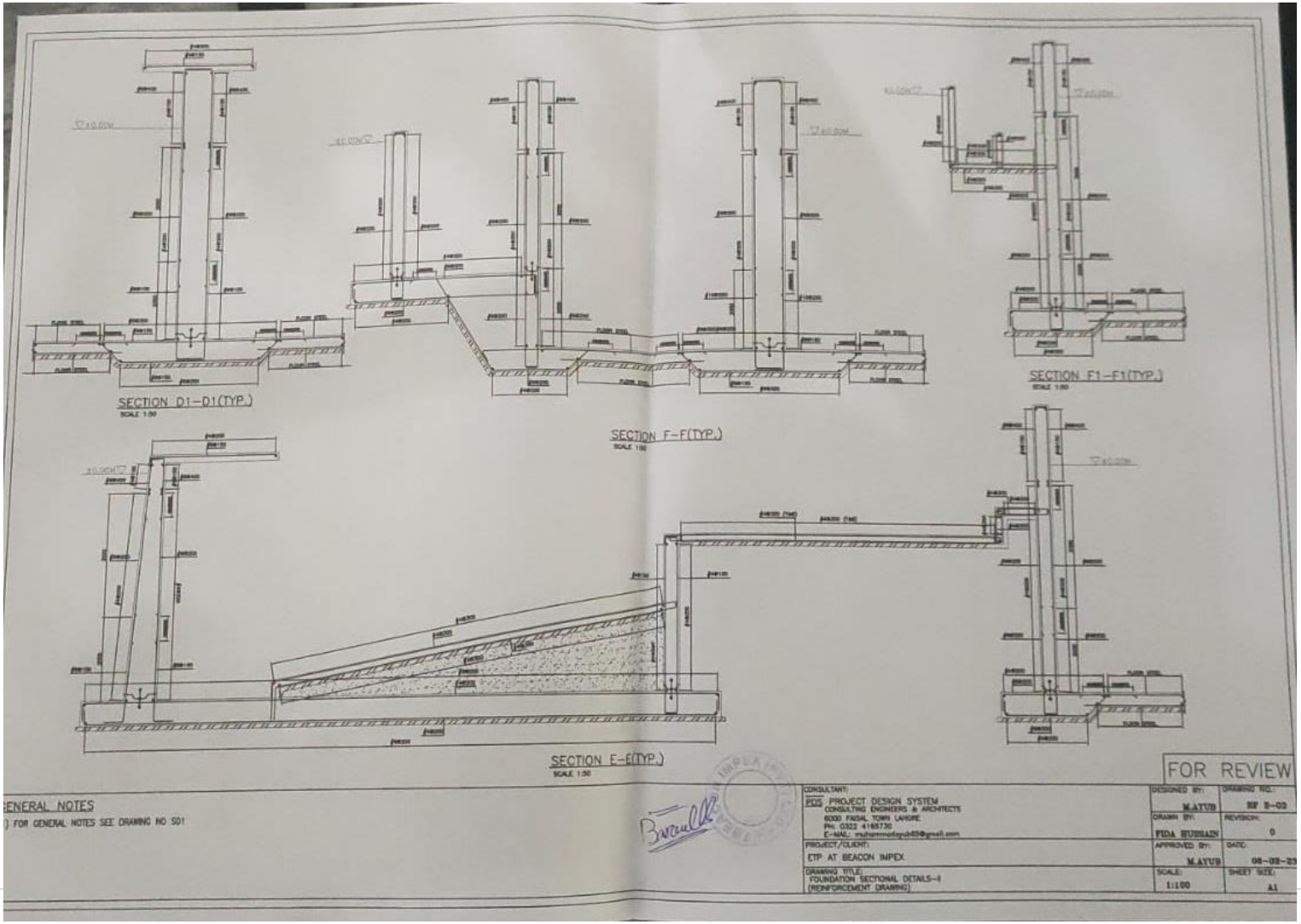

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2.16 Solid Waste Management

Solid waste will primarily consist of the domestic solid waste from during construction. About 500 kg to 1,000 kg per day of domestic solid waste will be generated from the project. The garbage will be collected at a designated area within the area as an intermediate garbage disposal. From this place, garbage will be collected and transported to a suitable location for final disposal. The location for this final disposal will be decided in consultation with the City District Government.

2.17 Atmospheric Emissions:

Dust and particulate matter will be generated during the construction activities. Sprinkling of water will be done on dust tracks, stock piles; raw material will be covered by plastic sheets, loading and unloading of raw material will be done at night etc.

2.18 Electrical Works

The design criterion for the electrical works will be in compliance with the requirements of WAPDA. Street lights will be provided and their maintenance will also be carried out by the management of the industrial stakeholders. Sui gas will be provided after approval from the department.

2.19 Fire Protection System

An addressable fire protection system with detection and alarm annunciation and other installations etc. would be provided to protect against any fire hazards. Fire buckets and fire extinguishers will be placed at all sensitive places within the proposed project. There will be five security guards round the clock which improves the security of the project site and also in its vicinity.

2.20 Restoration / Rehabilitation Plan

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

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

2.21 Government approvals required by the project:

Project proponent has obtained approval for disposal of liquid waste. Approval from Social Security Departments, Labor departments and others concerned departments are in process.

Suitability of the Site

The site does not fall in environmental sensitive area and all commodities are at a suitable distance from project site as they will not impacted by the construction activities even locals will get more benefits and job opportunities. No replacement, relocation and rehabilitation are required for the development of proposed project

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CHAPTER # 3

DESCRIPTION OF ENVIRONMENT

3.1 Introduction

This chapter describes the baseline conditions, which cover the existing physical, ecological, and socioeconomic environment of the Study Area. Information on these aspects has been derived from the desk study of available data, field visits to the project area as well as information obtained through visits to the Government departments and other agencies namely Irrigation Department, Meteorological Department, Forest offices and prevailing environmental laws and environmental quality standards etc.

3.2 General

An environmental baseline study is intended to establish a database against which potential project impacts can be predicted and managed later. This section 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 project have been considered with respect to physical, biological and socio-economic aspects. A site visit was conducted to survey the field area and to collect environmental data on physical, biological and socio-economic parameters. Further, consultations were held with the general public and stakeholders of the project area in order to seek the public opinion on the implementation of the subjected project.

3.3 Physical Environment

3.4 Location:

Faisalabad lies in the rolling flat plains of northeast Punjab, at 186 meters (610 ft.) above sea level. The city proper comprises approximately 1,230 square kilometers (470 sq. mi) while the district encompasses more than 16,000 square kilometers (6,200 sq. mi). The Chenab River flows about 30 kilometers (19 mi), and the Ravi River meanders 40 kilometers (25 mi) to the southeast. The lower Chenab canal provides water to 80% of cultivated lands making it

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the main source of irrigation. Faisalabad is bound on the north by Chiniot and Sheikhupura, on the east by Sheikhupura and Sahiwal, on the south by Sahiwal and Toba Tek Singh and on the west by Jhang.

3.5 Geology

The district of Faisalabad is part of the alluvial plains between the Himalayan foothills and the central core of the Indian subcontinent. The alluvial deposits are typically over a thousand feet thick. The interfluves are believed to have been formed during the Late Pleistocene and feature river terraces. These were later identified as old and young floodplains of the Ravi River on the Amalia and Chenab Plains. The old floodplains consist of Holocene deposits from the Ravi and Chenab rivers.

The soil consists of young stratified silt loam or very fine sandy loam which makes the subsoil week in structure with common kankers at only five feet. The course of the rivers within Faisalabad are winding and often subject to frequent alternations. In the rainy season, the currents are very strong. This leads to high floods in certain areas which do last for a number of days. The Rakh and Gogera canals have encouraged the water levels in the district however the belt on the Ravi River has remained narrow. The river bed does include the river channels which have shifted the sand bars and low sandy levees leading to river erosion. Faisalabad is situated at the center of the lower Rachna Doab, the area is located between the Chenab and Ravi rivers. There is a mild slope from the northeast to the southwest with an average fall of 0.2-0.3 meters per kilometer (1.1-1.6 feet per mile). The city is situated at an elevation of about 183 meters (600 ft.). The topography is marked by valleys, local depression and high ground.

Faisalabad stands in the rolling flat plains of northeast Punjab, between longitude 73°74 east, latitude 30°31.5 North, with an elevation of 184 meters above sea level.

There are no natural boundaries between Faisalabad and adjoining districts. The Chenab River flows about 30-Km (19 mi) to the north-west while the River Ravi meanders about 40 km (25 mi) south-east of the city. The lower Chenab canal is the main source of irrigation water, which meets the requirements of 80% of cultivated land. The soil of Samundari-Faisalabad comprises alluvial deposits mixed with loess having calcareous characteristics, making it very fertile. Due to its high evaporation - transpiration, Faisalabad features an arid climate.

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The entire land mass up to long distances is flat and sizeable area is under industrial use. Canal water and sub soil are used for irrigation and industry. The project area contains unfolded sedimentary alluvial deposits which are seismically stable within a radius of 100-km. The nearest fault is the Salt Range Thrust (SRT) fault with no significant tectonic activity.

3.6 Soils

Soils form major relation with environment. They influence environment by their special qualities and more so through fertility. Types of soils besides providing food, clothes or housing population serve with special food and lumber products, medicinal plants etc. Soil should not be taken as a lifeless residual layer but it is a very dynamic element of environment in which very complicated physical, chemical and biological activities are constantly proceeding. In this way it is a dynamically changing and developing body. Soil scientists restrict the word soil or solemn merely to the surface material, which has come to have distinct layers or horizon over the extended period of time.

Soils have different meanings for different people. To a Soil Scientist, it means the upper a few layers created through weather effect in which plants are grown. The solid portion of soil is both organic and inorganic. The organic part consists of both living and decayed plant and animal materials.

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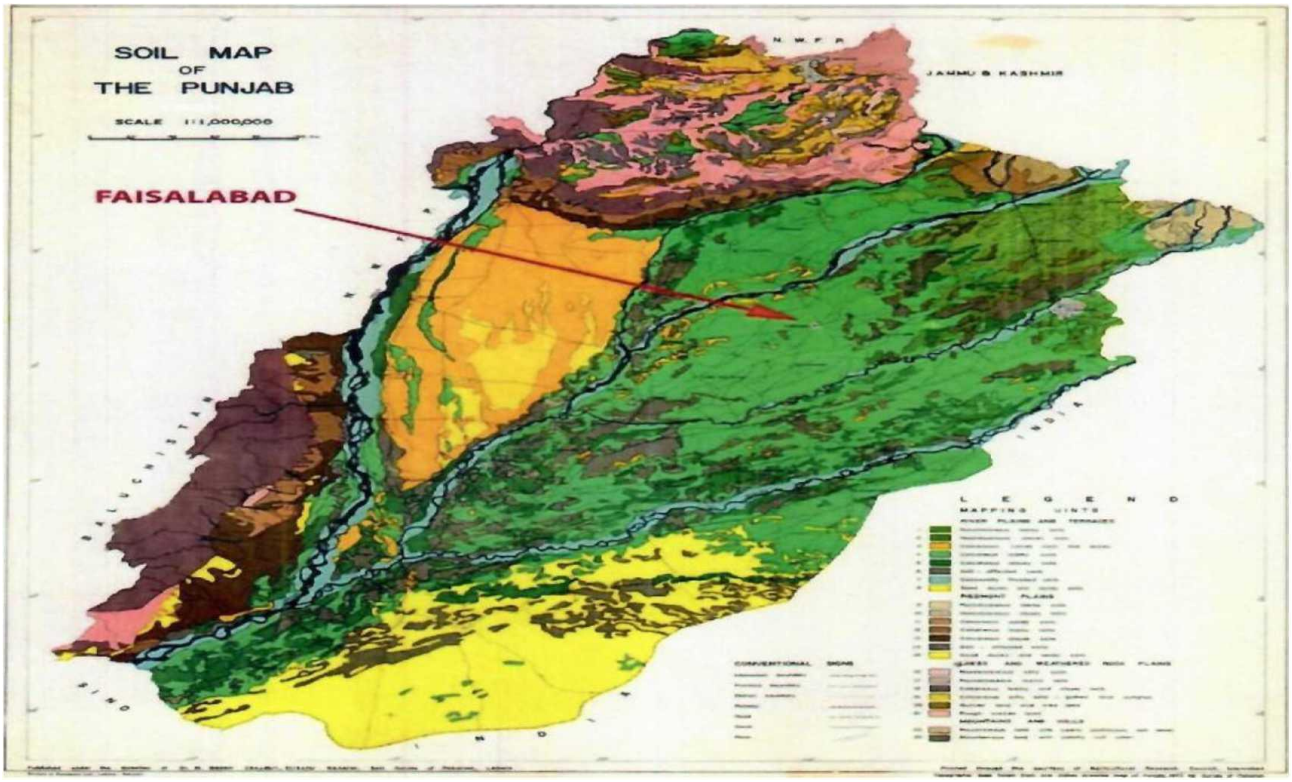

Figure 3 Indicates Project Area in Punjab Soil Map

The soils of the adjoining project area are fertile and rich in both organic and inorganic mass because the project site lies right into the center of the Ravi and Chenab River called as Rachna Doab. The area is made up of flood plain deposits of Qmx (Stream bed and meander belt deposits) and Qfx (flood plain deposits of lower terraces).

The adjoining rural area gives higher yields of crops through the use of synthetic fertilizers and pesticides. Their irrational use is adding to pollution of soil, and water bodies.

3.7 Climate:

Pakistan extends from 240 N to about 370 N with its western border lies close to 620 E. north eastern border extends to about 74/120 E and lies on the western margin of one of the major climatic regions of the world. Therefore, her climate is more continental. Reversal of wind system and variable character of monsoon are quite complex. A major part of Pakistan is dominated by dry climate. Temperature and amount of rain fall determine type of natural vegetation in any area.

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These physical features have great bearing on climatology of the area like the entire country; the project area has also four seasons distinctly:

Cold weather season - December to March

Hot weather season - April to June

Monsoon season - June to September

Post Monsoon season - October and November

With the arrival of summer, the area becomes heated and low-pressure area is created. In the month of July atmospheric pressure rises 996.0 millibars in the area under reference. The major sources of the rain fall in the area include the Monsoon Rainfall (July, August & September), Western Depression Rainfall by western depressions and Thunderstorms Rainfalls (spring & autumn rainfall).

The weather in the city is monitored by the Pakistan Meteorological Department. The Pakistan Meteorological Department regularly provides forecasts, public warnings and rainfall information to farmers with the assistance of the National Agromet Centre. Average annual rainfall is approximately 784 millimeters (30.9 in). It is at its peak in July and August during monsoon season though western disturbances during winter months also bring considerable rainfall associated with hail.

Climate data for Faisalabad [hide]

Month	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Year
Record high °C (°F)	26.6 (79.9)	30.8 (87.4)	37 (99)	44 (111)	47.5 (117.5)	48 (118)	46.1 (115.0)	42 (108)	41.1 (106.0)	40 (104)	36.1 (97.0)	29.2 (84.6)	48 (118)
Average high °C (°F)	19.4 (66.9)	22.2 (72.0)	27.4 (81.3)	34.2 (93.6)	39.7 (103.5)	41.0 (105.8)	37.7 (99.9)	36.5 (97.7)	36.6 (97.9)	33.9 (93.0)	28.2 (82.8)	22.1 (71.8)	31.6 (88.9)
Average low °C (°F)	4.8 (40.6)	7.6 (45.7)	12.6 (54.7)	18.3 (64.9)	24.1 (75.4)	27.6 (81.7)	27.9 (82.2)	27.2 (81.0)	24.5 (76.1)	17.7 (63.9)	10.4 (50.7)	6.1 (43.0)	17.4 (63.3)
Record low °C (°F)	−2.9 (26.8)	−1.4 (29.5)	1 (34)	7 (45)	13 (55)	17 (63)	19 (66)	18.6 (65.5)	15.6 (60.1)	9 (48)	2 (36)	−1.3 (29.7)	−4 (25)
Average precipitation mm (inches)	31.5 (1.24)	41.3 (1.63)	49.1 (1.93)	43 (1.7)	24 (0.9)	103 (4.1)	202.4 (7.97)	190.6 (7.50)	100.3 (3.95)	9.8 (0.39)	2.6 (0.10)	20.4 (0.80)	743 (29.3)

Table- 3.1 Monthly Temperature and Precipitation

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During winter the weather usually remains cloudy associated with frequent fog. Record-breaking rainfall of 264.2 millimeters (10.40 in) was recorded on 5 September 1961 by the Pakistan Meteorological Department.

3.8 Dust Storm

Storms rarely occur in the project area.

3.9 Earthquakes

The area is not listed in the seismic potential zone.

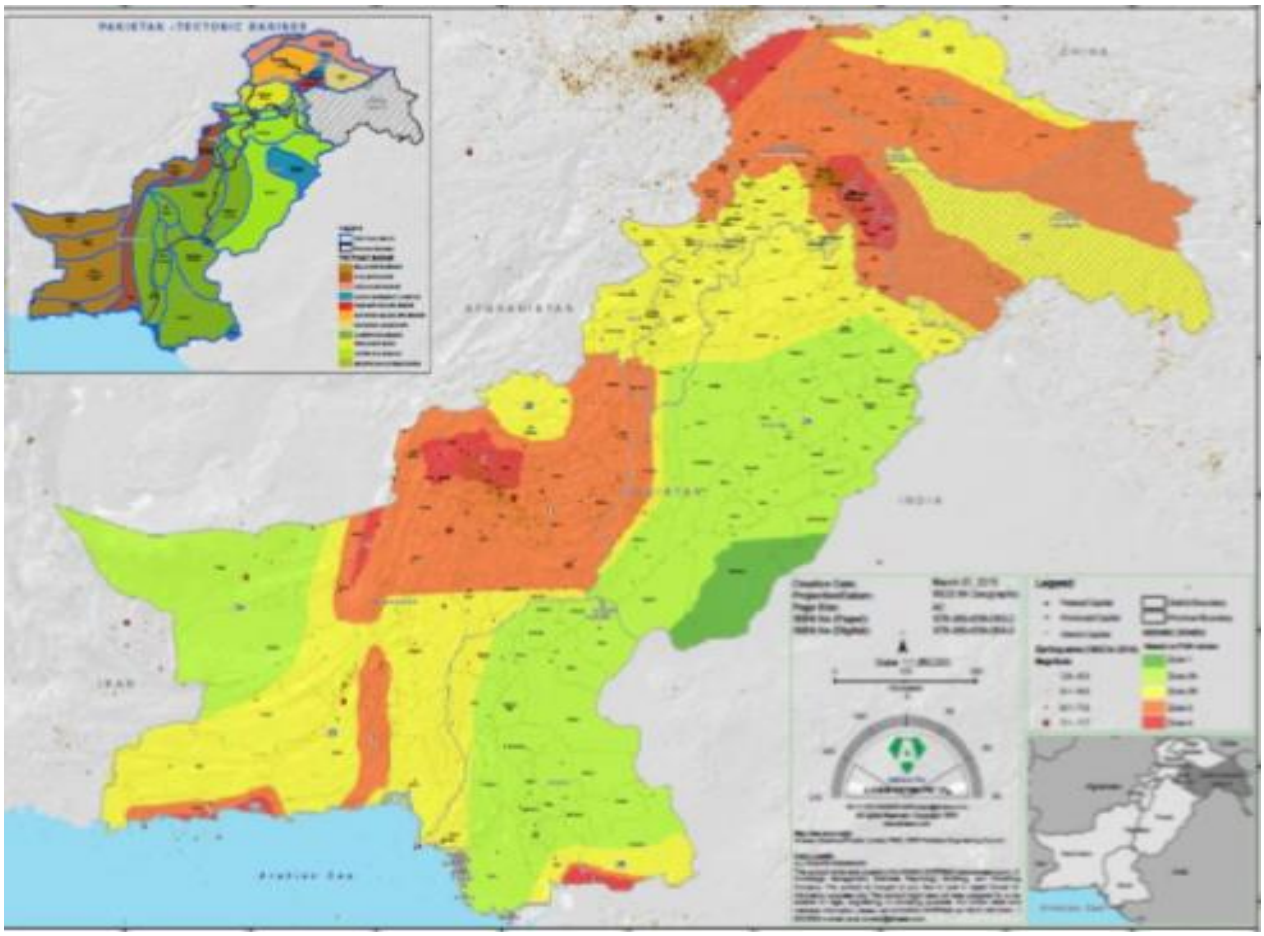

Figure 4 Pakistan Seismic Activities and Zoning Map

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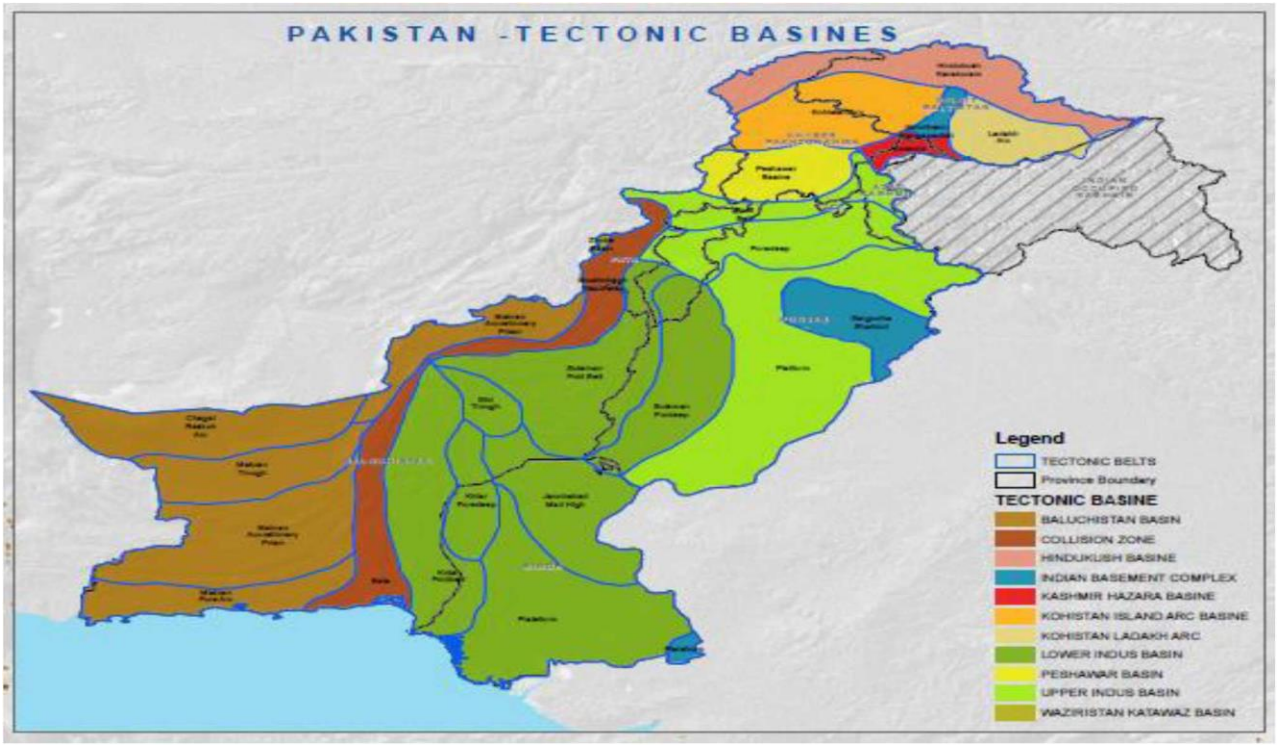

Figure 5 Pakistan Tectonic Basins

3.10 Biological Resources

There is no fish farming in the area either naturally or commercially.

3.11 Fishery and Aquatic Biology

The nearest natural drain has no fish. There is no fish farming in the area either naturally or commercially.

3.12 Biodiversity

Mainly a country's wilderness areas and scenic landscapes with their associated flora and fauna form natural capital of a country. Both collectively and within each level, the range or variety of the resources is referred to as the "Biological Diversity". The contribution of the "Natural capital" is recognized at three distinct levels including genera, species, and community -habitat and ecosystem.

Pakistan comprises of a total of nine major ecological zones and the term has relevance for each of Pakistan's administrative units—district, province, and particularly country. The greater the number of genera, species and habitats and ecosystems present within these units,

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the greater is the biodiversity. It is in this background that the biodiversity of the area is discussed below.

3.13 Wildlife in the Project Area

The project is to be sited within the urban area of Faisalabad city; therefore, there is no likelihood of any wildlife, game reserves or else around the project site. On very limited scale the following native birds like sparrows, pigeons, crows, doves, rats, lizards, snakes, etc., are found here and there, like in all Punjab.

3.14 Flora in the Project Area

Since the project site is situated within the urban area of the city of Faisalabad. Therefore, there is no likelihood of any forest or any type of flora worth mentioning around the project area.

3.15 Socioeconomic development:

3.16 Economy of Faisalabad:

Faisalabad contributes over 20% toward Pakistan's annual GDP; therefore, it is often referred to as the "Manchester of Pakistan". Faisalabad's average annual GDP is $20.55 Billion (USD), of which 21% comes from agriculture. The surrounding countryside, irrigated by the Lower Chenab River, produces agricultural commodities such as cotton, rice, sugarcane, wheat, fruit and vegetables. The city has carved a niche as an industrial Centre with its highways, railways, railway repair yards, processing mills, and engineering works. It is a producer of industrial goods and textile manufacturing including cotton and silk textiles, super phosphates, hosiery, dyes, industrial chemicals, clothing, pulp and paper, printing, agricultural equipment, ghee (clarified butter), and beverages.

The Faisalabad Chamber of Commerce and Industry monitors industrial activity in the city and reports their findings to the Federation of Pakistan Chamber of Commerce and Industry and provincial government. The city has a major dry port and international airport.

Faisalabad is recognized as the center of the textile industry in Pakistan, contributing to half of Pakistan's total textile shipments. At the end of June 2012, textile mills employed 20% of the nation's workforce, and generated 1.3 trillion rupees ($13.8 billion) in textile products,

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most of which were exported to the US and Europe. While Punjab's economy is driven primarily by agriculture, the textile industry along with leather products and light engineering goods play an important role, with more than 48,000 industrial unit spread across Punjab. In an effort to boost bilateral trade, Romania and Turkey have honorary- consulates in Faisalabad which enable trade links with the city. The Faisalabad clock tower and its eight bazaars (markets) remain a major trading zone in the city. Each of the eight bazaars has a special name and is known for selling certain goods as follows:

i. Aminpur Bazaar supplies stationery and interior decor Aminpur Bazaar supplies stationery and interior decor
ii. Katchery Bazaar, named for the court (Katchery) is known for its mobile phone and accessory market.
iii. Kharkhana Bazaar is known for herbal medicines.
iv. Jhang Bazaar supplies fish, meat, vegetables and fruits.
v. Bhawana Bazaar supplies electrical and electronic goods.
vi. Rail Bazar is a gold and cloth market.
vii. Chiniot Bazaar is known for allopathic and homoeopathic medicinal stores, cloth, blankets, sofa cloth, and curtains. It also has poultry feed wholesale shops.
viii. Montgomery Bazaar (also known as Sutar Mandi) is known for yarn and raw cloth trading.
ix. Gol Bazaar contains dry fruit, as well as wholesale soap, oil, and ghee shops. Samundari-Faisalabad has received substantial funding from the government of Punjab and the city district government to improve infrastructure and roads to rural areas. In an effort to deal with the energy crisis, the FCCI has been working with private companies to develop renewable energy resources such as solar energy and the construction of dams within the district. CAE, a German- based renewable energy company, has disclosed plans to establish the first solar panel manufacturing facility in Faisalabad, second of its kind in Asia, with intentions of investing upwards of €100 million (Rs 12.9 billion) for its development

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3.17 Traditional Crafts

There is no traditional craft worth mentioning in the Tehsil Samundari District Faisalabad. Samundari-Faisalabad has the greatest concentration of power looms in the country. More than 90,000 power looms are reported working in the Samundari Tehsil

3.18 Geographical Indications

The Project Director (Geographical Indications), Industries, Commerce & Investment Department, Government of the Punjab has identified the following Important Geographical Indications in the district:

- Power Looms (Textile Cloth)
- Agricultural Implements.

3.19 Education

Faisalabad is home to the University of Agriculture, Government College University as well as the Ayub Agricultural Research Institute. Divisional Public-School Faisalabad and National Textile University. The city has its own cricket team, Faisalabad Wolves, which is based at the Iqbal Stadium. There are several other sports teams that compete internationally, including hockey and snooker as well as other sporting events.

The education system is monitored by the District Education Officer of the City District Government of Faisalabad. The city government reports its findings to the Ministry of Federal Education and Professional Training and the Minister for Education. Funding is provided by the Government of Punjab, Pakistan. City District Government and the fees collected from schools. There are four levels of the education system in the city: Primary. Elementary. High and Higher Secondary Level.

3.20 Main Crops

Sugarcane. Wheat. Cotton. Maize. Moong and Rice are the main crops grown in the district. Besides. Tobacco. Bajra, Jawar, Mash, Masoor. Gram, Oil Seed such as Sunflower and Rape seed, Mustard Seed is also grown in minor quantities in the district.

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3.21 Main Fruits

Guava, Citrus and Mango are the main fruits grown in the district. Besides, Banana, Phalsa, Pears and Peach are also grown in minor quantity in the district.

3.22 Main Vegetables

Potato, Cauliflower, Onion, Lady Finger and Tomato are the main vegetables grown in the district. Besides, Bottle Gourd, Carrot, Turnip, Brinjal, Garlic, Chilies, Radish, Bitter Gourd and Peas are also grown in the district in minor quantities.

3.23 Quality of Life Values

3.24 Roads

The majority of roads are under the control of the National Highway Authority, linking Faisalabad with other cities in the country.

3.25 National Highways and Motorways Passing Through Faisalabad

- Faisalabad is connected to various parts of the country by several National Highways and Motorways
- The Grand Trunk Road, otherwise known as GT Road, is the original highway that links Faisalabad to most parts of Pakistan as well as neighboring countries. GT Road was the main highway that ran through the district before the completion of the motorways
- The M3 motorway (Pakistan) or M3 is a controlled-access motorway connecting Faisalabad with the M2 motorway (Pakistan) or M2 via the Pindi Bhattian Interchange. The M2 was the first motorway connecting Rawalpindi and Islamabad to Lahore.

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- The M4 motorway (Pakistan) or M4 is an access-controlled motorway connecting Faisalabad to Multan. The M4 once complete will join the M5 which will run to the southern city of Karachi.

The district government has worked with the National Highway Authority to connect Multan and Faisalabad. The construction of the M4 is completed and opened for commutation. The new motorway will help reduce congestion, boost trade, and reduce travel times and transportation costs from Faisalabad, a major textile hub to the major trade centre of Multan. One section of the M4 was inaugurated on 16 March 2015 which links Faisalabad to Gojra.

3.26 Buses

The Faisalabad Urban Transport System Service (FUTS) is the main bus operator within the city. It was launched in 1994, and operates a number of large CNG buses and smaller Toyota Hiace vans connecting the majority of the city. There is another public-private run bus operator. Brothers Metro, which is a consortium between the government of Punjab and a private firm who operates a fleet of air-conditioned CNG buses.

3.27 Rail

The Faisalabad railway station is the central railway station in the city. The railway line forms part of the Khanewal-Wazirabad railway line. Rail services are operated by Pakistan Railways, owned and operated by the Ministry of Railways.

Cargo Express services are operated by Pakistan Railways which runs from Karachi to Faisalabad via Multan. Twenty-seven bogies comprise the goods train, and are handled respectively by private contractors at the station. The station has a special cargo facility operated by the Ministry of Railways (Pakistan) for handling various goods from the city to other regions of the country. An express parcel service runs from Karachi to Lahore via Faisalabad

3.28 Air Traffic

Faisalabad International Airport is approximately 15 kilometers (9.3 mi) from the city center and is a major airport for domestic and international travel. The airport includes a cargo

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facility. As of January 2016, passenger flights are run by the national flag carrier, Pakistan International Airlines, and a number of Middle Eastern carriers. There are seasonal Hajj operations to Jeddah and Medina operated by Shaheen Air. Fly Dubai became the first international carrier to launch operations from the city followed by Qatar Airways, Air Arabia and Gulf Air.

In 2015. Significant upgrades and renovations to the airport were initiated by the Pakistan Civil Aviation Authority, including updates to aviation technology, construction of additional areas and services for travelers, and the expansion of air traffic capabilities to accommodate wide-body aircraft such as the Boeing.

3.29 General Quality and Availability of Sub-Soil Water

Underground water resources are generally brackish and are not suitable for human consumption and for irrigation. Tube wells have been installed along the banks of canals to supply drinking water to the inhabitants of cities.

3.30 Effluent Disposal Facilities

There are 93 drains nullahs in the district of varying lengths for effluent disposal. However, prior written permission from Irrigation and Power

Department. Government of the Punjab is necessary for discharge of effluent in the nullahs/drains, after pre-treatment to remove harmful ingredients.

3.31 Power Supply

There are 25 grid stations in the district ranging in capacity from 66 KV to 220 KV.

3.32 Natural Gas Availability

Natural gas is available in all main towns of the district.

3.33 Tele-Communication Facilities

There are 113 telephone exchanges operating in the district, ranging in capacities from 100 lines to 20630 lines. Cellular phone services are available in the district.

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3.34 Industrial Estate

The Faisalabad Chamber of Commerce and Industry monitors industrial activity in the city and reports their findings to the Federation of Pakistan Chamber of Commerce and Industry and provincial government. The city has a major dry port.

Punjab Small Industries Corporation has established an industrial estate at Sargodha Road, Faisalabad over an area of 244 acres. A total number of 1020 of plots varying in sizes from 7 marlas up to 4 kanals have been developed. Out of which 65 allotments have been made to the Pakistani Entrepreneurs living abroad as well as allotted to different domestic entrepreneurs yet the colonization of estate is only about 80%.

3.35 Dry Port

Faisalabad Dry Port Trust handles imports and exports of various items. The export items are bleached cloth, printed cloth, dyed cloth, cream cloth (white color), grey cloth, garments, made ups, gents & ladies/children dresses, cotton yarn, cotton working gloves, power looms & parts, major starch, etc.

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CHAPTER # 4

Screening of Potential Environmental Impacts and Mitigation Measures

4.1 General

This Chapter identifies the potential impacts due to the implementation of project on the physical, biological and social environment of the Project Area.

The potential environmental impacts related to design, construction and operational stages of the Project. Environmental protection measures are recommended to eliminate adverse impacts on environment or to reduce them to an acceptable level within the prevailing legislative and regulatory framework. These Impacts are evaluated on the basis of magnitude, immediacy and sustainability. Evaluation criteria are as follow:

4.2 Project Location

M/S Beacon Impex Pvt ltd situated 35-km Sheikhupura Faisalabad road, Faisalabad.

- **Magnitude**

- Type of impact (direct, indirect, and cumulative)

- **Immediacy**

- Temporal extent (during construction, after construction)
- Spatial extent (local, widespread)

- **Sustainability and Reversibility**

- Mitigation (fully, partially)
- Monitoring (fully, partially

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Table 4.1 Typical Impacts during the project and its Mitigation Measures

Impacts	Typical Mitigation Measures
Soil	• Installation of drainage ditches • Runoff and retention ponds Minimize disturbances and scarification of the surface • Usage of appropriate monitoring and control facilities for construction equipment deployed • Methods to reuse earth material generated during excavation
Resources – fuel / construction materials, etc.	• Availing the resources which could be replenished by natural systems etc.
Deforestation	• Plant or create similar areas • Initiate a tree planning program in other areas
Water pollution	• Storm water drainage system to collect surface runoff • Treatment of all effluents containing acid/alkali/organic/toxic wastes Ground water Monitoring • Use of biodegradable or otherwise readily treatable additives Neutralization and sedimentation of wastewaters, where applicable Dewatering of sludge and appropriate disposal of solids • Waste oil treatment • Controlling discharge of sanitary sewage and industrial waste into the environment • Avoid activities that increases erosion or that contributes nutrients to water (thus stimulating alga growth) • Treated wastewater (such as sewage, industrial wastes, or stored

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	surface runoffs) can be used as cooling water makeup. • Develop spill prevention plans in case of chemical discharges and spills • Develop traps and containment system to chemically treat discharges
Air Pollution	• Adopt sprinkling of water, wetting of roadways to reduce traffic dust and re-entrained particles • Control vehicle speed on sight • Ensure periodical wash of construction equipment and transport vehicles to prevent accumulated dust • Ensure vehicles are covered during transportation • Provide dust collection equipment at all possible points • Maintain dust levels within permissible limits • Provision of PPEs such as nose masks etc.
Noise Pollution and Vibrations	• Use of suitable muffler systems/enclosures/sound-proof glass paneling on heavy equipment/pumps/blowers as appropriate • Pumps and blowers may be mounted on rubber pads or any other noise absorbing materials • Proper scheduling of high noise generating activities to minimize noise impacts • Usage of well-maintained construction equipment meeting the regulatory standards • Periodic maintenance of equipment/replacing whenever necessary/lubrication of rotating parts, etc. • By using damping, absorption, dissipation, and deflection methods Performance specifications for noise represent a way to insure the procured item is controlled
Social	• Health and safety measures for workers

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	• Development of traffic plan that minimizes road use by workers Upgrade of roads and intersections • Ensure public involvement • Exploration of alternative approach routes in consultation with local community and other stakeholders
Occupational Health and Safety	• Provision of worker camps with proper sanitation and medical facilities, as well as making the worker camps self- sufficient with resources like water supply, power supply, etc. • Arrangement of periodic health check-ups for early detection and control of communicable diseases. • Provide preventive measures for potential fire hazards with requisite fire detection, fire-fighting facilities and adequate water storage
Construction	• Have a Transport Management Plan in place in order to prevent/minimize the disturbance on surrounding habitats • Initiate traffic density studies
Solid / Hazardous Wastes	• Proper handling of excavated soil • Proper plan to collect and dispose off the solid waste generated onsite. Identify an authorized waste handler for segregation of construction and hazardous waste and its removal on a regular basis to minimize odor, pest and litter impacts • Prohibit burning of refuse onsite.

Environmental Management Plan

- The administrative and technical organizational structure to ensure proposed project monitoring programmed for approved mitigation measures are implemented including the involvement of the ministry and other stakeholders.

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- The EMP devised to mitigate the adverse impacts of the project should be detailed including allocation of resources and responsibilities for plan implementation.
- Details of the emergency preparedness plan and on-site and off-site disaster management plan should be discussed extensively.
- Environmental Monitoring Program should be detailed to provide specific information on; monitoring pollutants at receiving environment for the appropriate notified parameters – air quality, ground and surface water, land etc. during project phases; specific program to monitor safety and health of workers, appropriate monitoring network has to be designed and proposed, to assess the possible residual impacts on environmental components and details of in-house monitoring capabilities and the recognized Ministry, department and agencies for conducting the monitoring.

Remediation Plans after Decommissioning

- The need to decommission the project (temporarily or permanently) at any point.
- Develop appropriate plan for the restoration of the environment to include soil, air, water, land, vegetation, fauna, socio-economic, cultural and other components.

4.3 Impacts during the Design Phase

The potential environmental impacts of the establishment work along with the mitigation measures during the pre-establishment/design stage of the Project are described in this Section.

4.3.1 Seismic Hazard

Seismic Zoning Map of Pakistan showing Project site area.

Mitigation

Structure of the project is designed for even moderate to large earthquakes. For seismic hazard analysis, updated structural and seismic evaluations are consulted.

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4.3.2 Traffic Congestion and Disturbance to People

Due to the establishment of the proposed industrial project, the traffic in the Project area will increase and may result in traffic disruption if proper parking facilities are not provided within the establishment area. This will be a temporary and moderate negative impact.

Mitigation

Adequate parking facilities for the workers will be provided within the premises during establishment to avoid any disturbance in the traffic flow on the project's road. Parking space will be provided during operational phase.

4.3.3 Emergency Response

Disasters such as earthquakes, flooding and other manmade disasters, such as fires, may occur which have to be considered for minimizing their impacts. This will be a permanent and moderate negative impact.

Mitigation

Complete equipment control system, fire escape stairs and secured access system supplemented with close circuit surveillance equipment/alarms will be included in the design of project. Adequate internal and external water distribution system will be designed, which could also supply adequate quantity for fire-fighting during emergency.

4.3.4 Energy Conservation

- Energy conservation lights will be used to put a minimum load on the electricity system.
- Design of the building will be energy efficient (30-40% less energy consumption as compared to conventional methods) and the building will be centrally air conditioned.
- Local material will be used up to maximum level to avoid transportation.

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4.4 Likely adverse impacts during construction phase

The anticipated environmental impacts related to the establishment Project have been studied for the establishment stage and are discussed here with.

- Establishment Noise
- Dust Emission during Establishment
- Change of Land Use
- Water Sourcing
- Vehicle and Equipment Exhaust
- Soil Contamination
- Socioeconomic Impacts
- Community and worker's Safety
- Traffic Disturbance
- Employment Conflicts
- Poverty Alleviation
- Project and Community Interface

These impacts are discussed and their mitigation measures are also written below:

4.4.1 Placement of Establishment Material on Site

Improper and hazard placement of the establishment material can block the roads, passages and walkways. This is a temporary and moderate negative impact.

Mitigation

All establishment material will be placed at the specified place and kept covered within the project site premises and will not be placed on roads / passages / walkways. Only authorized persons will be allowed to access the material.

4.4.2 Disposal of Establishment Waste/ Excavated Material

Dumping of establishment wastes/excavated material in the surrounding area may result in dust pollution. This will be a temporary and moderate negative impact.

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Mitigation

Management of Establishment activities will be done in a way to ensure minimum degradation to the soil around the Project area and dumping of excavated waste will be done at a designated site. The contractors will be bound by contractual obligations to take care of the waste generated from the establishment activities to avoid any discomfort to the community.

4.4.3 Dust Generation

Substantial quantity of dust in and around the active establishment area may be generated from the, traffic/machinery movement and transportation of establishment material at the project site. Prolonged exposure to dust might result in respiratory tract infections and asthmatic problems to the establishment workers, the natives of the area and commuters. This will be a temporary and moderate negative impact.

Mitigation

Establishment phase of the new building can be effectively mitigated by the implementation of simple procedures by the Contractor including but not limited to the following:

- During establishment the activities will be conducted in a controlled way with water sprinkling to avoid the dust pollution.
- All excavation work will be sprinkled with water.
- Establishment workers will be provided with masks for protection against the inhalation of dust; and
- Vehicle speed on the roads along the Project Site will be prescribed and controlled accordingly.

4.4.4 Noise

When the establishment work is undertaken, constant operating of machinery will raise the noise level in the Project Area. Since noise is a by-product of human activity, the area of exposure increases as a function of the mobility and establishment of structures. Noise due to the establishment will be a temporary and minor negative impact.

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Mitigation

Mitigation measures mentioned below will be adopted to minimize the noise pollution. Those measures include, but are not limited to the following:

- Selection of up-to-date and well-maintained equipment with reduced noise levels ensured by suitable in-built dampening techniques or appropriate muffling devices.
- Confining of excessively noisy areas and limiting the work to normal working hours in the day.
- Providing the establishment workers with suitable hearing protection like ear cap, or earmuffs and training them in their use.
- Regular checkups and maintenance of the establishment equipment,

4.4.5 Flora

Operation phase Project will not involve any cutting of bushes and trees. However new trees will be planted by the management to keep the environment clean. This will be a moderate positive impact.

Mitigation

Not required

4.4.6 Fauna

There is no wildlife present in the Project area. Also, the local animals and bird species of the area are very much domesticated and will not be adversely affected by the Project execution.

Mitigation

Not required

Relocation of Utilities

The establishment of the operation phase for the project structure will not involve relocation of any public utilities.

Mitigation

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Not required

4.4.7 Poverty Alleviation

Establishment of the operation phase of the project structure will generate the employment opportunities for the population living in the area. This will be a temporary minor positive impact.

Mitigation

Not required

4.4.8 Sanitation and Solid Waste Disposal

During the establishment stage, solid waste and sanitary wastewater will be generated at the Project site due to the establishment activities and presence of the temporary toilet(s). Staggering of solid waste on the ground will give rise to unhygienic conditions and spread of diseases. Similarly, if the wastewater is allowed to stagnate in water ponds on the site, it can create unhygienic conditions and some of the wastewater may also percolate the soil, thereby, polluting the groundwater. This may pose a moderate negative impact.

Mitigation

All the solid waste will be disposed-off in accordance with the regulations. The contractor will provide septic tank for the toilet waste to treat the sanitary wastewater before its discharge into public sewer.

4.4.9 Workers' Safety and Hygienic Conditions

The establishment activities impose certain negative impacts on health and safety of the workers and public in case of unsafe and/or unfavorable working conditions. Mitigation measures will be required to minimize health and safety related negative impacts of the Project. This will be a moderate negative impact.

Mitigation

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Implementation of the following measures will ensure health and safety of the workers and the public during the establishment phase:

- The Contractor will ensure that the establishment workers/labour are trained in safety procedures for all relevant aspects of establishment;
- Establishment workers will be provided with proper safety equipment such as helmets, goggles, masks, etc.;
- Formal emergency procedures will be developed for establishment site in case of an accident. First aid kits and other necessary equipment will be kept available at site along with the list of emergency phone numbers to be contacted in case of any emergency/accident;
- The safety of the public at all stages of the establishment will be ensured through appropriate public education and safety measures such as use of sign boards, barriers and flags;
- Proper illumination will be provided at night;
- Sides of the excavation area will be covered with corrugated protection sheets to avoid any sliding of soil;
- Only one entrance will be provided in the area excavated for foundations;
- Warning signs will be displayed in local language.
- Fence will be used all around the site.

4.4.10 Air Quality

During establishment, the continuous operation of machinery and movement of the heavy trucks and vehicles may generate gaseous emissions. These emissions may create public health risks and nuisance on the bio-physical environment. This will be a temporary and minor negative impact.

Mitigation

The Establishment Contractor of the Project will ensure regular spraying of water on the access roads to minimize the dust generation and regular monitoring of all vehicles, equipment, and machinery used for establishment. All vehicles, machinery, equipment and

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generators used during establishment activities will be kept in good working condition and properly tuned and maintained in order to minimize the exhaust emissions.

4.5 Likely adverse impacts during Operation stage

The anticipated environmental impacts related to the operation phase Project have been studied for the operational stage as discussed herewith.

4.5.1 Air Quality

During operational stage of the project the continuous operation of generator, air conditioners etc. may deteriorate the quality of air in the open area. This will be a permanent and minor negative impact.

Mitigation

In order to minimize air pollution, following mitigation measures are recommended:

- An air quality monitoring and improvement plan will be developed to keep the air pollution levels from generator, air conditioners, plant room etc. within the limits of National Environmental Quality Standards (PEQS);
- Level of air pollution (as specified in the (PEQS) will be monitored on regular basis and appropriate mitigation measures will be implemented;
- For control of indoor air quality, carbon filters will be used in addition to normal filters to remove odor from circulating air; and
- Vehicles with excessive smoke emissions will not be allowed to enter the building.

4.5.2 Noise

During the operational stage, noise levels are anticipated to increase. Noise will be generated due to increased number of visitors, movement of vehicles in the parking area, operation of machinery and generators etc. for which proper mitigation measures are required. This will be a permanent and moderate negative impact.

Mitigation

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Noise generation from the generators will be minimized through the application of engineering solutions through noise proofing of the generator's room. The good quality generators will be purchased that will generate minimum noise. Noise levels of generators, machinery etc. will be monitored and staff working near them will be provided with ear muffs and noise protection. In the absence of ambient noise standards in the Country will be followed.

4.5.3 Groundwater Consumption

The ground water will be used within the project site for domestic purpose. Water storage will also be required for emergency response in case of a fire. Prolonged water consumption may in the long run lower/deplete the underground water table. This will be a permanent and moderate negative impact.

Mitigation

An effective 'Water Conservation Plan' will be developed and staff will be trained in operational water conservation measure such as use of water efficient/economy appurtenances and reuse of wastewater for gardening of the trees/plants. Less water consumption will also reduce the load on the sewerage system.

Following operational measures will be adopted for water conservation:

- Taps will not be kept running while cleaning and buckets will be used for holding water instead;
- It will be made sure that all faucets, circulating pumps etc. do not leak and are in good repair;
- Any leaking or dripping faucet, pump or toilet will be reported immediately;
- All the utility bills will be kept in a safe place to track the consumption of water; and
- Purchase and use of water-saving equipment will be practiced;
- An effective training program will be implemented about water conservation.
- Rainwater will be harvested for use in landscaping purposes.

4.5.4 Wastewater Generation

Sewage water will be the main wastewater generated.

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Mitigation

The proponents of the Project will construct septic tank for primary treatment to bring the waste water quality up to a minimum level before its discharge in the existing public sewer.

4.5.5 Solid Waste

Solid waste generation is an important issue. Improper management of solid waste directly affects the health of the people and becomes breeding place for the mosquitoes, other insects and rodents.

Mitigation

All raw materials will be recycled during the activities as road filling and maintenance purposes.

HSE manager will be appointed by the proponent to manage the solid waste on regular basis, to ensure the good housekeeping at site and in production unit, to inspect any discrepancies arise due to improper functioning of the HSE conditions and to adopt the proper solid waste management system.

4.5.6 Emergency Response

The operation of the of the project site will involve staff, occupants and visitors who may have accidents. In addition, disasters such as earthquakes and fires may occur which have to be considered for minimizing their impacts. This will be a permanent and moderate negative impact.

Mitigation

- An Emergency Response Plan for earthquakes and manmade disasters will be developed by the Management. Emergency Response Plan will be implemented in close consultation with the Fire Fighting Department, Bomb Disposal Squad and Paramedics. Emergency drills will be carried out periodically. A full-time First Aid Provider will be employed to help the affected in case of any accident.

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- Exact time of evacuation in case of a potential emergency can be precisely estimated after carrying out emergency drills (when the building is completed and operational). However, it can be assumed that the whole building will be evacuated within 6 minutes of an emergency.

4.6 Potential Environmental Enhancement Measures

The operation phase of the project has a number of positive impacts, which include:

- The project does not involve any land acquisition issue because the land is already owned by the Project proponent.
- No residential and commercial structures will be affected.
- The project has a potential to create employment opportunities, and will improve the standard of living/ livelihood of the population in the project area.
- The project will help in economy growth of Pakistan

4.7 Corporate Social Responsibility (CSR)

CSR means "the continuing commitment by business to behave ethically and contribute to economic development while improving quality of life of the workforce and their families as well as of the local community and society at large". CSR Commit entrusted with task of identifying areas where the Management could participate positively to the development and improvement of better society in the project area. The Commit Processing factory mandate is to initiate, facilitate, coordinate and monitor CSR projects of the Company.

4.8 Structural Stability

While carrying out the detailed designing of the project building structural, engineering, safety and seismic considerations have been taken into account to make it structurally viable and environment friendly. Project proponent has obtained structural stability certificate for the project's structures.

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4.9 Undertaking

The proponent has committed to comply with the relevant Establishment by-laws/ safeguards and the environmental enactments for the environmental preservation. Project proponent has given Undertaking and Affidavit a respectively

4.10 Base line environmental data

Base line environmental data of the project area was monitored. Environmental data was collected through actual onsite monitoring for ambient air quality, noise levels and through laboratory testing of various water samples. Required details of monitoring are reported as under.

4.10.1 Ambient Air Quality

Details of the monitored gaseous pollutants and particulates are given under respective headings as below.

- Gaseous
- For obtaining site specific base line (primary) data, ambient air quality monitoring was done at 5 Points on the quarries and outside boundary lines.
- DRAGER, Germany manufactured ambient air quality monitoring equipment was used. Monitoring was carried out for Sulfur dioxide (SO2), Nitrogen oxides (NOx--NO and NO2) and Carbon monoxide (CO).
- Particulates
- Particulate's monitoring was done at 5 locations of the project site.
- Iso-Kinetic the Casella System (Instrument) designed to comply with BS 3405 and ISO-9096 for compliance monitoring of particulate matter (particulates) was used for the monitoring.

4.10.2 Noise Levels

LEADER Sound Level Meter, Japan was used for noise levels monitoring. Monitoring for noise levels was carried out at 05 points within project site and outside boundary lines.

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4.10.3 Water Quality

Water samples was collected from project sites, Laboratory test results of these water samples are reported.

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CHAPTER # 5

ENVIRONMENTAL MANAGEMENT PLAN & MONITORING PROGRAM

5.1 Purpose and Objectives of the EMP:

- The primary objectives of the EMP are to:
- Facilitate the implementation of the mitigation measures identified in the EIA
- Define the responsibilities of the project proponent.
- Define a monitoring mechanism and identify monitoring parameters in order to:
- Ensure the complete implementation of all mitigation measures
- Ensure the effectiveness of the mitigation measures
- Provide a mechanism for taking timely action in the face of unanticipated
- Environmental situations identify training requirements at various levels

5.2 Management Approach:

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

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

5.3 Institutional capacity

Following functionaries will be involved in the implementation of EMP:

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

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

5.4 Training of building contractor

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

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

1. Handling of Machineries in a safe way
2. Use of PPEs
3. Maintenance of vehicles and submission of Environmental Monitoring Reports
4. Maintenance of Water Consumption records
5. Testing of water and waste water and submission of Environmental Monitoring Reports
6. Placement of safety signs/boards during construction
7. Sprinkling of water on the roads and dusty tracks
8. Monitoring of generator emissions
9. Training regarding all other aspects of HSE will be ensured by the contractor during the construction phase.

5.5 Responsibility of EMP

Overall responsibility for implementation of EMP will be that of project proponent. He will appoint an HSE/Project Manager of relevant qualification. HSE/Project Manager will act as Environmental Manager and will manage the all HSE condition at the PEQS.

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Table 5.1 Summary of Impacts and mitigation measure

Serial	Environmental Issues/ Impacts	Mitigation Measures
PLANNING, SITE SELECTION AND DESIGN STAGE		
1	Observance of administrative and legal formalities	It is recommended for obtaining of approval from other relevant departments
2	Acquisition of land	The proposed land is the property of the project proponent.
3	Loss of environmentally sensitive areas	There is no any sensitive area near the project site however the project proponent will achieve the PEQS at the boundary wall of the subject project to avoid the environmental impacts on the nearby industrial unit
4	Changes in traffic pattern	There is no need to change the traffic pattern due the development of the subject project because no. of industries has been developed at the same link road only few vehicles will visit the project on daily basis.

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5	Potential conflicts with stakeholders	There is no any conflict at the current stage of the project. Neighboring industries were visited regarding their concerns. They have no any objection regarding development of the subject project as per proposed design. It is recommended to Settle the issues through scoping and specific group discussions.
6	Resettlement issues	No resettlement issues
7	Project Design	Structure Stability Assessment of soil has been done, as per building design i.e., total area of building, etc. Provision of Emergency Exits, Assembly Points, firefighting arrangements, water storage for firefighting should be incorporated in the design.
SITE DEVELOPMEN STAGE		
1	Erosion due to stripping and site clearance	Sprinkling of water on road side or dusty tracks
2	Generation of dust	Careful loading and unloading of construction materials is recommended. Sprinkling of water on construction site and

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		surrounding areas is recommended.
3	Generation of noise	Avoid suing forbidden horns at the site. Do not throw heavy equipment and construction materials in haphazard manner.
4	Local flooding/ponding	Immediate repair and maintenance of water supply pipes and sewers in case of any defect will be undertaken.
5	Outbreak of fire	Firefighting equipment must be maintained at the site in good working condition.
6	Safety	Safety of the workers and others must be ensured.
7	Labor issues	Employ the local labor as far as possible Wages of the labor should be as per Government policy
CONSTRUCTION STAGE		

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1	Minor erosion of land	• There are two types of erosions: Wind Erosion Water erosion It is recommended to construct the boundary wall first that will reduce the soil erosion due to wind and chances of water erosion due to water flow from the adjacent will be reduced also. Clearing of land should be step wise; vegetation should be removed only from the area where main building will be developed. Add more vegetation, restore the land by more plantation Sprinkle water on dusty tracks is recommended
2	Contamination of land and water	Hazardous substances like, fuel, etc. should be kept on concreted surface. Essential services like water supply, sewerage disposal and solid waste management must be in working condition.

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3	Impacts of dust, noise and flue gases on neighbors	Sprinkle water on dusty tracks is recommended Avoid suing forbidden horns at the site. Do not throw heavy equipment and construction materials in haphazard manner. Proper tunings of vehicles and machinery must be ensured. Schedule construction timings should be implemented for minimum disturbance to neighbors. Continuous Environmental monitoring must be ensured as per proposed monitoring plan.
OPERATION STAGE		
1	Contamination of land and water sources	Continuous vigilance on maintenance of services Tarpaulin sheets must be placed to avoid leaching of into ground

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2	Fire breakouts	Training of workers regarding flammable substances will be ensured. SOPs of fire prevention will be adopted like forbidden of smoking, regular testing of electricity infrastructures and regular testing of gas supply system to the industry. Firefighting equipment must be kept in working condition at site
3	Safety/security concerns	Safety of the workers and others will be ensured. Privacy of the neighbors will not be disturbed.
4	Malfunction of utilities	It is proposed to appoint maintenance engineer with technicians like plumber and electrician for smooth operation of utility services.
5	Occupational Health, Safety and Environment	Regular medical check-ups must be ensured to improve the working condition and efficiency of workers. Relevant safety devices like belts, gloves and testers must be strictly used by the operators at the work site. Safety of management, workers and visitors must be ensured. Observance construction and safety codes must be ensured.

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		Provision of emergency exits must be ensured.
6	Production of Solid Waste	Area for solid waste must be reserved within the subject project. The solid waste must be managed on regular basis. The waste will be disposed-off in environment friendly way.

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Table 5.2 ENVIRONMENTAL MANAGEMENT PLAN

Serial No	Environmental Parameter/ Element	Mitigation measure to be taken during:		
		Construction	Regular operations	Responsibility
Physical Environment				
1	Wastewater	The sewage to be generated shall be discharged into the **Effluent Treatment Plant** Facility for its treatment and then it will drain into nearby drain Domestic/construction wastewater after Treatment in septic tank will be drained into nearby local sewage drain. Periodic cleaning of the Effluent Treatment Plant Facility is Recommended	The sewage to be generated shall be discharged into the Effluent Treatment Plant Facility for treatment at PEQS levels. As there will be no chemical contamination, therefore, simple oxidation may reduce its pollution load. Road cuttings to lay sewer shall be done after due permission from the concerned authority. Sewage and other waste effluents will be handled to avoid contaminating surface and groundwater. No contaminated effluents will be released into the environment without having been	Environmental/Project Manager

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			treated. Monitoring will be conducted by EPA certified lab if required	

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2-	Health & safety	Local people will be informed in advance	Fire Fighting Equipment's & system will be installed.	Environmental/Project
		when work is about to start in an area.		Manager
		This may result in people keeping young	Basic health facilities will be provided to	
		children away from work areas.	Employees	
		Safe driving practices will be adopted,	Security guards will be present	
		particularly while passing through settlements	Job opportunity will be provided to local people of the area	
		Job opportunity will be provided to local people of the area		
		Basic health facilities will be provided to employees		
3-	Water supply	It shall be ensured that no activity tempers with the water supply system.	It shall be ensured that no activity tempers with the water supply system. Project proponent committed to provide safe drinking water to all workers and	Environmental/Project Manager

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			staff	
4	Solid wastes	Limited solid wastes from the construction activities shall be segregated and duly disposed of. The solid redundant materials will be disposed of away from the city adequately. None of these wastes shall be accumulated on site. It shall be ensured that none of the wastes or materials of construction spread on the public roads or on the foot path or else. Construction Solid waste will be stored in solid waste bins and will be handed over to Faisalabad Development Authority (FDA) Solid waste management division,	Solid waste will be handed over to the local Government after collection from houses. Solid waste bins will be placed at suitable places Area for solid waste disposal will be allocated within the subject project Sludge will be replaced on regular basis. Proper solid waste management system will be adopted.	Environmental/Project Manager

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		and also, construction waste will be used for road repairing and maintenance purpose.		

5	Noise	In order to avoid noise in the project area, vehicles to carry raw materials, shall be operated during night time as far as possible. The project construction activities don't involve any activity which may create high noise levels. Ear plugs will be provided & implemented.	In order to avoid noise in the project area, vehicles to carry domestic and commercial materials, shall be operated during night as far as possible. No activity producing extra ordinary levels of noise will be allowed as a policy matter. Generators will be installed in a specially constructed room where its noise will be curtailed within the limiting values of the	Environmental/Project Manager

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6	Gaseous emissions and particulate matter/dust emissions	Construction materials i.e., sand, clay and like shall be transported to the project site during night time and will be stored away from the road or foot path. They will be kept under cover to avoid any fugitive dust. Dust may generate during unloading of raw materials. All equipment, generators, and vehicles used during the project will be properly tuned and maintained in good working condition in order to minimize exhaust emissions. All project vehicles will be checked emitting smoke. Ambient air quality has been monitored by EPA certified Lab and results are incorporated within the report.	Diesel fired generator shall cater for emergency situation only. Their exhaust will be emitted through an adequately fabricated stack. Scrubbers/dust collection system will be installed at the stack of generator if required. Monitoring will be conducted as per PEQS if required	Environmental/Project Manager

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7	Soil erosion	The clearing of vegetation along proposed site will be minimized as far as possible. Minor & scattered vegetation is present that include shrubs and grasses only. Open fires will not be allowed anywhere outside the proposed site. Fuel-wood and shrubs will not be used as fuel during project activities.	Maximum plantation is recommended within at outside the land subdivision and for this area is reserved. Tarpaulin sheets will be placed under generator (s), and other leaching substances. Land will be restored by planting indigenous plants	Environmental/Project Manager
8	Traffic related Problems	The vehicles number will be regulated in a way that no stampedes occur on the site. As far as possible, large size vehicles in very limited number may visit the project site during night time.	The project site has additional area reserved exclusively for parking cars and motor cycles. No vehicle or motor cycle will be allowed to be parked in the front of the road and project as well.	Environmental/Project Manager
9	Trash burning	No trash burning will be allowed in or oust side the unit building.	No trash burning will be allowed on the roads and streets.	Environmental/Project Manager

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10	Dust	The open place in front of the building will be duly cleaned after sprinkling of water to avoid any dust to spread around.	Plantation will be ensured in open space to avoid dust.	Environmental/Project Manager
BIOLOGICAL ENVIRONMENT				
11	Fauna and Flora	Proposed site is devoid - off any protected species of both fauna & flora	Awareness programs will be planned regarding the protection of fauna & flora. Species of Indigenous plants will be planted at site.	Environmental/Project Manager
SOCIOECONOMIC IMPACTS				
12	Resettlement Issues	There is no any issue of resettlement due to the construction of the subject project.	There will not be any issue of resettlement due to the operation of the subject project.	Environmental/Project Manager
13	Change in Cultural Language	Maximum employment of Local people is recommended to preserve the local cultural language. It will help in communication with the	Maximum employment of Local people is recommended to preserve the local cultural language. It will help in communication with the	proponent

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		local people to resolve any emerging issue near the project area	local people to resolve any emerging issue near the project area	
14	Education	School and colleges exist in the area. The project proponent will initiate an educational awareness program.	School and colleges exist in the area. The project proponent is committed to initiate an educational awareness program	proponent
15	Health	Heath facility already exists near the project site at the distance of about 1- km. The project proponent should provide first aid facilities at site and also social security and medical checkups of the workers.	Heath facility already exists near the project site at the distance of about 1- km. The project proponent is committed to provide first aid facilities at site and also social security and medical checkups of the workers.	proponent
16	Culture, Norms of the area	Maximum local employment should be ensured to preserve the culture of the Area	Maximum local employment should be ensured to preserve the culture of the Area	proponent
17	Gender inequality	Women involvement in decision making process should be ensured.	Women involvement in decision making process should be ensured.	proponent

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5.6 Environmental Technical Assistance and Training Plan

In order to raise the level of professional and managerial staff, there is a need to upgrade their knowledge in the related areas. HSE/Project Manager should play a key role in this respect and arrange the training programs.

HSE/Project Manager will provide training to staff and workers about the best environmental management practices at the construction site and affective implementation of the EMP.

The training modules will include air, noise and water pollution monitoring, social awareness, Environmental Laws, Punjab Environmental Quality Standards (PEQS),

Usage of personal protection equipment's, and health and safety related issues on the construction site. The HSE/Project Manager will train all workers & staff in basic sanitation and health care issues (e.g., how to avoid malaria and transmission of Sexually Transmitted Infections (STI) HIV/AIDS and in general health and safety matters, and on the specific hazards of their work. Training should also consist of basic hazard awareness, site specific hazards, safe work practices, and emergency procedures for fire, evacuation. HSE/Project Manager will arrange Training on monthly or quarterly basis regarding health & safety, hygiene, firefighting and first aid.

5.7 Monitoring Plan

Proponent will ensure overall monitoring the project so that all intended activities may take place in accordance with environmental assessment.

5.8 Training schedules

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

5.9 Need for Disaster Management and Emergency Response System

In order to cope up with the possible hazards it is imperative to prepare the Disaster Management Plan and rehearse it frequently. To evaluate effectiveness of the system preparedness exercises and drills should be undertaken frequently. Small courses should be run to train the relevant persons about their actions during emergency. The administration staff need be familiar with the firefighting procedures and equipment.

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5.10 Equipment Maintenance Detail

The subject project is M/S Beacon Impex Pvt ltd situated 35-km Sheikhupura Faisalabad road, Faisalabad the proponent of the subject project will maintain records for Health Safety & Environment and will hire Environment/HSE manager to check and deal with the HSE issues. The subject project will maintain medical facilities, firefighting Equipment's as fire buckets, fire hydrants and fire extinguishers and records for their periodic fillings or replacement and will ensure proper housekeeping and essentials facilities.

5.11 Environmental Budget

The cost required to effectively implement the mitigation measures is important for the sustainability of the Project both in the construction and operation stages of the Project. Project proponent will allocate the Environmental Budget for the Training, maintenance and management of Environment is 200,000/- quarterly that will include filling and maintenance of equipment's, restoration, plantation, and strategic planning to cope with any emergency and formulate the disaster management plan to cope with natural disaster. Any equipment or devices failure or replacement will not be included in this budget.

Schedule of implementation

The proponent is waiting for the environmental approval from environmental protection department. No Construction work has been initiated so far as the company is waiting for the Environmental Approval from the Department. After the approval, the project construction work would be carried out within 6-8 months.

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Sr. #	Activities	2.5 Months			2.5 Months			2.5 Months			2.5 Months		
		4W	4W	2W	4W	4W	2W	4W	4W	2W	4W	4W	2W
1	Detailed Designing												
2	Mobilization of Contractors												
3	Lean Development Period												
4	Peak installation Period												
5	Plantation at Site												
6	Commissioning												*
W=Weeks													

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Environmental Practitioners and Experts

Name	**Post**	**Qualification**
Hassan Waqas	HSE Manager	MPhil Environmental Sciences (NEBOSH)
Usama Zafar	HSE Officer	BE Energy and Environment Engineering
Fajar Waheed	Senior Environmentalist	BS Environmental Sciences
Abdul Rehman	Senior Environmental Officer	MPhil Environmental Sciences
Bilawal Zafar	HSE Officer	BS Environmental Sciences
Iqra Zahid	Environmentalist	BS Environmental Sciences

Following functionaries will be involved in the implementation of EMMP:

- The project Proponent as owners of the EMMP.
- Project contractor(s) as executors of the EMMP during installation and operational phase of the project.
- Operational & Maintenance (O&M) and the Health, Safety and Environment team of the project as an executor of the EMMP during the installation and operational phase of the project.

Designation	Responsibilities
Manager	• Direct operations at the site. • He will act as team lead. • Interact with other executives, mine staff and community residents. • Effectively motivate staff to follow protocols and to work productively. • Look after the Health and Safety Related issues. • Responsible for scheduling staff and ensuring that supplies are stocked. • He will play a direct role in developing business goals for the mine they run, and he will help to produce a business plan to ensure that those goals are met.

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Accountant	• Proper management of the funds for the CSR. • Development of fund proposal for environment related expenses. • Ensuring the smooth transaction of funds for environmental related projects/activities. • He will prepare the yearly budget. • Taking minutes in meetings and other administrative duties. • During his shift timings, he will be responsible to look into smooth functioning of the process in environmentally sustainable way. • He will be responsible to rectify any problem regarding environmental matter in collaboration with concerned authorities. • Prepare reports on different events and incidents. • He will report all matters regarding E.M. to the manager.

Responsibilities of Functionaries

- Responsibilities of Management of Project

Management of the project will be responsible for the environmental management and supervisory affairs during the project activities. Environmental personnel designated by the management of the project will look after the environmental related issues during the project activities. The responsibilities of environmental personnel are as follows:

- Monitoring progress of the project as per planned schedule of activities.
- Exercising oversight over the implementation of environmental mitigation measures by the contractor.
- Documenting the experience in the implementation of the environmental process.
- Preparing training materials and implementing programs.
- Maintaining interfaces with the other lined departments/ stakeholders and
- Reporting to the management of the project on the status of EMMP implementation.

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Proposed Environmental Management and Monitoring Plan (EMMP)

The Environmental Management and Monitoring Plan (EMMP) will be used as a management and monitoring tool for implementation of the mitigation measures identified in the EIA report.

The EMMP matrix lists down:

- The required mitigation measures recommended in the EIA report.
- The person/organization directly responsible for adhering to or executing the required mitigation measures and monitoring adherence to the mitigation measures.
- The parameters, which will be monitored to ensure compliance with the mitigation measures.
- The timing at which the mitigation or monitoring has to be carried out.
- Budget allocated for management practices (cost of EMMP)
- Project Proponent will hold primary and overall responsibility for ensuring full implementation of the EMMP.

EMP Review and Revision

The EMP shall specify the procedures for the review and revision of the EMP during Project implementation and have a version control procedure. At a minimum, the site-specific EMP shall be reviewed by the Contractor to determine if an amendment or a major revision is warranted:

- At least once every six (6) months or on a seasonal basis;
- As a result of changes in the project or changes in the anticipated environmental effects of the project;
- After corrective actions have been taken in response to an environmental incident;
- after an adaptive management measure has been proposed
- A material revision is one which would be relevant to the question of whether an adverse environmental effect is more likely to occur, or become more adverse, and

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be significant;

- After a material revision of the EMP is proposed that changes a commitment such as:
    - a reduction or increase of monitoring or reporting requirements; or making a specification less stringent or more stringent.

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CHAPTER # 6

INVOLVEMENT OF STAKEHOLDER/ PUBLIC CONSULTATION

6.1 EIA and Public Consultation Process

Stakeholder participation in planning and management of the social and environmental issues assists in reducing the concerns of stakeholders and hence increases public acceptance towards development programs. Consultation process entitles the stakeholders with opportunities to participate in key decisions that will affect their lives. Therefore, detailed public consultation meetings were arranged at different levels of the planning process. For this purpose, periodic consultation meetings were held with various project stakeholders. Different aspects and impacts of the proposed project were highlighted regarding their impacts on the physical, biological, and socio-economic environment of the project area. Stakeholders' trepidations regarding various aspects like existing environment, and impacts of the project on the surrounding environment were emphasized and have been added to this EIA report.

6.2 Proponent

Barkat Ali S/O Khurshid Ahmed R/O Canal Road, House no P-617, Block K, Wapda City, Faisalabad.

6.3 Objectives of the Public/Stakeholders Consultation

Public consultation plays a vital role in studying stakeholders' perspectives regarding the project and henceforth the successful implementation and execution of the proposed project. Public involvement is a compulsory feature of Environmental Impact Assessment, which leads to improved and acceptable decision-making. The primary objective of the stakeholders' consultations was to learn and know the apprehensions, concerns, and opinions of the key stakeholders over environmental implications of the project activities from public perception. The consultation sessions also served as a source of firsthand information about the users and the beneficiaries' expectations from the project. Dialogue with the stakeholders

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and recording their concerns at appropriate stages of the project would help to tailor the project in line with stakeholders' aspirations and so increases the likelihood for public acceptance of the project and its subcomponents. It also helps to develop and maintain communication links between the project proponents and stakeholders, providing opportunities to the public to influence the project design in a positive manner. This ensures that the views and concerns of the stakeholders are incorporated into the project design and implementation with the objectives of reducing or offsetting negative impacts and enhancing benefits of the proposed project.

6.4 Methodology

6.4.1 Responsible Authority

The consultation process began with the identification of the most pertinent stakeholders. Identification of the stakeholders for the proposed project plays a crucial role in development and also assists in quantifying the role of different stakeholders involved. Impacts identified by the stakeholders are measured through matrix method and mitigation measures are proposed according to the intensity of the identified impacts. Efforts were made to identify the relevant stakeholders through a systematic process based on the nature and degree of their actual and perceived stakes related to the project.

6.4.2 Issues Discussed with the stakeholders

Following issues were discussed during the stakeholder consultation meetings:

- Concerns, apprehensions, and views of the community and the stakeholders over the project activities relating to design, construction and operational aspects.
- Probable adverse impacts of the project activities on various components of the environment i.e., physical, biological, and social components
- Possible remedies for the concerns and apprehensions, how the concerns can be effectively addressed?

Identification of any specific personal or site related concerns

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- How the project operations can happen in accordance with user/beneficiaries' expectations?
- Beneficial factors and involvement opportunities of the local people in the set of activities of project during construction and operational phases.
- Material's transport management during construction and operational phase of the project.
- Management of water, wastewater and solid waste during construction and operational phase of the project.
- Natural hazards, associated risks and precautionary measures.
- Traffic issues subjected to activities during different phases of the project.

6.5 Environmental Practitioners and Expert

According to the EIA rules and regulations this report will be compiled and submitted to the Environment Protection Department (EPD) and after the review on the report this report will be disseminated to the public. This dissemination and information sharing exercise will then be followed by public participation through print media in which the public will be requested for their reviews. The copies of the report will be placed in the EPA for comments from the public which will be incorporated in the report. As per rules and regulations, Environment Protection Department will hold a public hearing at the proposed project site.

Other Departments and agencies

Proponent applied for other department NOC and will be provided in an operational phase of the project

Responsible Authority

HSE manager will be responsible for all the operational activities

Environmental Practitioners and Experts

Name	**Post**	**Qualification**
Hassan Waqas	HSE Manager	MPhil Environmental Sciences (NEBOSH)
Usama Zafar	HSE Officer	BE Energy and Environment

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		Engineering
Abdul Rehman	Senior Environmental Officer	MPhil Environmental Sciences
Fajar Waheed	Senior Environmentalist	BS Environmental Sciences
Bilawal Zafar	HSE Officer	BS Environmental Sciences
Iqra Zahid	Environmentalist	BS Environmental Sciences

Proponent Environment Management Team

Hassan Waqas	HSE Manager
Usama Zafar	HSE Officer
Abdul Rehman	Senior Environmentalist

Affected and Wider Community

There is no population present in the safe radius of the site that's why community will not be disturbed due to project operation. Although the opportunity of employment will increase if the project will approve.

Summary Of Issues Raised By Stakeholders

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

Issue	Aspect/Concern raised by Stakeholders	Project Proponent Commitments
Employment Opportunities	Expectations of employment are very high. Job opportunities are less for herders as they generally have less skills and training.	Employment is the main priority of the industry. Mostly locally skill and unskilled labor will be prioritized and also there will be job in executive level. Around 100 people will be employed by the industry.

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Training Opportunities	People are keen to consult with subject industry if the Project offers training and upgrading opportunities to enhance their trade or professional skills.	Development of the Training Strategy, including commitment of allocation of budget investment for training infrastructure, delivery and design. Installation of training facilities in for worker of the company and students will also be accommodating. The internship program will offer to the students to develop professional skills.
Health & safety	Truck traffic is a main concern because the road used by the Project passes through a number of small communities and different industries and there will be a high volume of trucks transporting concentrate.	Development of Transport Management Plan including traffic safety training. Traffic advisory signs will be installed along project site and all nearby specific areas.
Local economy and business development	Local service providers are keen to participate in providing services to provide raw material and expect to receive in order to adjust their businesses to meet specific needs. Local/regional companies and entrepreneurs have limited understanding about meeting the high volumes required by the Project and the quality standard, but are keen to know these requirements so they can become suppliers.	Proponent has main focus that they will all the material regarding construction and plant operation to buy from the local market. This will help the local and small business and to people who are keen interested to become suppliers.
Environmental Issues	Dust and noise impacts, particularly from the construction activities and in operation of mechanically unfit machines, are of concern to herders and other residents. Environmental degradation during road construction and use. Loss and change of vegetation due to soil degradation.	Implementation of controls under the Environmental Management Plans, including on and off-site dust and noise monitoring. A Participatory Environmental Monitoring Program will be launched to spread awareness.

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

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CHAPTER NO # 07

ASSESSING IMPACTS

7.1 Methodological Approach to Assessing Impacts

The main impacts of the policy which need to be assessed are summarized below.

Social / Public Health impacts
• Changes in health outcomes for patients
Economic impacts
• Changes in expenditure on pharmaceuticals (plus any changes in other healthcare costs) • Costs incurred by industry in providing additional information to patients • Costs of enforcing information provision standards • Administrative burdens associated with notifying the regulatory body of information provision • Other possible impacts (e.g. on competition and innovation)
Environmental impacts
• No significant environmental impacts have been identified.

A number of elements of research have been carried out to gather data to inform an assessment of these impacts:

- The literature review has generated some useful qualitative and quantitative material relevant to the impact of providing information to patients about medicinal products and health-related issues in order to gather evidence on.
    - The effects on patients, health professionals, health systems and public health of the provision of information to patients on medicinal products and illnesses.
    - The distinction between information and advertising.
    - The relative effectiveness of different information channels, such as the internet and written information.
    - The effects of how information is presented (drawing on behavioral economics research into framing effects).

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7.2 Evaluation of Identified Impacts

Methodology adopted for the identification, evaluation and analysis of environmental impacts by the proposed project is “Matrix Method and Significance Rating of Impacts”.

7.3 Environmental impact Matrices

The environmental impact matrices have been developed to evaluate magnitude of the impacts of various project activities on different environmental settings for construction and operation phases and are shown in **Tables** respectively.

A Matrix method helps in identifying the potential temporal & spatial impact and screens the project for environmental and social soundness. Each project activity is screened separately with regard to its construction and operation phases according to the various physical, ecological and social parameters. These impacts are characterized on the basis of extent, timing, magnitude, reversibility, probability, nature and duration. **Table 7.1 shows** the characterization of impacts

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Table 7.1 Environmental impact Evaluation Matrix during Construction Phase

	VEC/VSE	VEC/VSE Rating	Establishment and Functioning of Construction Camps workshops etc.	Excavation Operation of burrow and quarry Areas.	Transportation of construction Materials and Equipment's	Open storage of Construction materials, fuels etc.	Operation of Concrete	Functioning of Power generators	Land Acquisitions	Solid & Liquid waste management	Impact Score
Components	Air Quality and dust	**0.10**	**-3**	**-3**	**-2**	**-2**	**-3**	**-2**	**0**	**-1**	**-1.6**
	Soil Erosion & contamination	**0.05**	**-2**	**-2**	**-3**	**-2**	**-3**	**-1**	**0**	**-3**	**-0.8**
	Ground water Quality	**0.10**	**-3**	**-2**	**-2**	**-2**	**-2**	**-1**	**0**	**-2**	**-1.4**
	Noise	**0.10**	**-3**	**-4**	**-2**	**0**	**-3**	**-3**	**0**	**-1**	**-1.6**

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	Flora	**0.12**	**-1**	**-2**	**-2**	**-1**	**-1**	**0**	**0**	**-1**	**-1.0**
Bi physical environment	Fauna	**0.06**	**-2**	**-2**	**-2**	**-1**	**-2**	**-2**	**-2**	**-2**	**-0.9**
Socioeconomic Environment	Traffic management	**0.20**	**-3**	**-3**	**-4**	**-3**	**-2**	**-1**	**0**	**-2**	**-3.6**
	Social and cultural conflict	**0.07**	**-3**	**0**	**-1**	**-1**	**-1**	**-1**	**-4**	**-2**	**-0.9**
	Health and safety of Workers & community	**0.10**	**-3**	**-3**	**-3**	**-2**	**-3**	**-2**	**0**	**-3**	**-1.9**
	Employment / Economic activity	**0.10**	**3**	**3**	**2**	**0**	**1**	**1**	**-4**	**3**	**0.9**
		Legend	+Positive	0	No impact	2	Minim impact	4	Severe impact		

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			-Negative	1	Negligible impact	3	Moderate impact				

Environmental Impact Evaluation Matrix during Operational Phase

	Components	**Valued Ecological components**	**VECs Rating**	**Activities**			
				Movement of Vehicles	**Vehicles Emission**	**Dumping of solid waste in drain**	、
	Biophysical Environment	**Flora**	0.05	**0**	**-2**	**0**	**-0.10**
		Fauna	**0.05**	**-3**	**0**	**0**	**-0.15**
		Noise and Vibration	**0.10**	**-3**	**0**	**0**	**-0.30**

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		Drainage	**0.20**	**-2**	**0**	**-3**	**-1.0**
	Socio Economic Environment	**Road Safety**	**0.20**	**-4**	**0**	**-4**	**-1.60**
		Economic Activity	**0.15**	**3**	**0**	**0**	**0.45**
		Traffic Management	**0.25**	**4**	**0**	**-3**	**0.25**
Legend	**Positive (+)**	**0**	**No impact**	**2**	**Minor impact**	**4**	**Severe impact**
	Negative (-)	**1**	**Negligible impact**	**3**	**Moderate impact**		

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Table 7.2 Characterization of Impacts

Extent	Timing	Magnitude	Reversibility	Probability	Nature	Duration
Site Specific	Short Term	Negligible	No Change	Very Unlikely	Indirect	Temporary
Local Impact	Medium Term	Low	Reversible	Unlikely	Direct	Permanent
Area Impact	Long Term	Medium	Slowly Reversible	Likely		
Regional Impact	Multi-year and Permanent Impact	High	Irreversible	Certain		

In addition to assigning the numerical values to each marked box in the Matrix, plus (+) or minus (-) sign are used to show whether an impact is beneficial or adverse. The weighted matrix was applied to the environmental components listed on the y-axis against the activities of the proposed project listed on the x-axis prior to mitigation measures. In this process, numerical values were assigned from 0 to 1 for biophysical environment and socio-economic environment to indicate the significance of the affected environmental and social components. These numerical values were than multiplied with the individual project activity rating/values and all added to get an overall impact score. This impact score gives the relative significance of impacts for a specific component. The highest impact score gives the level of significance of that impact.

7.3.1 Identification of VECs

Biophysical and human environments that, if altered by the project, would be of concern to regulatory agencies, indigenous community, resource managers, scientists,

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stakeholders, and/or the general public. VECs are typically selected for assessment on the basis of regulatory issues, guidelines, and requirements; consultation with regulatory agencies, the public, stakeholder groups; field reconnaissance; and the professional judgment of the Study Team.

7.3.2 Significance Rating of Impacts

The overall significance of the impacts was defined based on the result of a combination of the ratings. Each identified impact was analyzed individually according to a number of criteria including descriptions of their extent, timing, magnitude, reversibility, probability, nature and duration. Taking into account these criteria, potential significance was classified as either:

- Low: The impact which has a slight influence on the natural and socio-economic environment;

- Medium: The impact which can be eliminated/ mitigated after applying the appropriate mitigation measures; and

- High: an impact, which, if not mitigated, could stop the project from proceeding

7.4 Delineation of Project Corridor of Impact (COI)

COI is a limit which identifies the area where direct and indirect impacts of the project activities are envisaged like existence of forests, game reserves, wetlands, archaeological sites etc. The limit for COI for the proposed project is taken as 250 meter radius for collection of baseline information, impacts assessment and mitigation measures of physical, ecological as well as social resources.
As the location of construction/contractor camps, vehicles, equipment yard, material quarry areas and access tracks have not been defined yet, so impacts evaluated due to these facilities in this section will be of generic nature

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CHAPTER NO # 8

MITIGATION AND IMPACT ASSESSMENT

8.1 Purpose of Mitigation Measure

The basic purpose of mitigation measures is to reduce the impacts of the establishment of Extension of the processing unit (dyeing, printing, screen printing) and effluent treatment plant by Beacon Impex Pvt Ltd situated 35-km Sheikhupura Faisalabad road, Faisalabad, on the socio-environment up to the maximum possible extent. The mitigation measures are suggested based on the following parameters:

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

The impacts from the Extension of the processing unit (dyeing, printing, screen printing) and effluent treatment plant by Beacon Impex Pvt Ltd situated 35-km Sheikhupura Faisalabad road, Faisalabad, will occur during the development and operation due to the civil work involved and the people residing in the project area. These issues included; 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.

8.3 Where problem should be addressed?

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

8.4 How the problem should be addressed?

Proper mitigations measures will be provided according to the nature of the impacts/problems. For example, against dust emissions sprinkling of water may be done on regular basis, for solid waste proper solid waste management and disposal practices may be adopted, to manage liquid waste proper treatment may be made before discharging into the receiving body.

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8.5 Ways of Achieving Mitigation Measures?

Following ways will be adopted to reduce the impacts of the quarrying:

8.5.1 Changing in Planning Design

For the process, industrial land is selected. The process selected for Extension of the processing unit (dyeing, printing, screen printing) and effluent treatment plant by Beacon Impex Pvt Ltd situated 35-km Sheikhupura Faisalabad road, Faisalabad, Project is the controlled system where physical, biological and chemical hazards are controlled or managed effectively. The chances of the biological contamination are reduced significantly. There is no endangered and threatened species present in the project area that could be impacted due to the installation of the facility. Moreover, there isn't any human settlement or infra-structure that will be dislocated or dismantled due to the proposed project development. No adverse impact is therefore being envisaged due to the installation of the facility in the proposed location as the process employed is controlled as for the management of the wastewater a septic tank will be installed and for the management of the solid waste and by-products a proper waste management plan will be formulated. Hence, there is no need to change the design of project.

8.5.2 Improved Management and Monitoring Practices

The anticipated impacts had been reduced significantly by adopting better management activities, as it will be carried out for betterment of the society. While environmental monitoring will be conducted on the regular basis to keep the sources of the wastewater generation, solid waste management, by-product management, noise and public nuisances in-check. Following practices that need to be adopted to reduce the impact significantly:

a. Compensation in Money Terms

Due to the construction of the facility, the vegetation present on-site will be removed and the geography/landscape of the area will be slightly changed on the permanent basis, however, there is no protected or environmentally sensitive area present within 10.0 km vicinity of the project that could be impacted due to the Extension of the processing unit (dyeing, printing, screen printing) and effluent treatment plant by Beacon Impex Pvt Ltd situated 35-km

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Sheikhupura Faisalabad road, Faisalabad, project Hence, no compensation in the monetary terms will be required. However, for the removal of the one tree from the leased area 3-5 trees will be planted as the compensation along the facility boundary.

b. Replacement/Relocation/Rehabilitation

The proposed project is located in industrial area. There is no sensitive area, population or natural resource is present which could be impacted due to the installation of the facility. No replacement, relocation and rehabilitation are required because construction and operational phase

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CHAPTER # 9

CONCLUSION AND RECOMMENDATIONS

1. Processing mills are significant for textile industries as they transfigure fiber into yarn and yarn into fabric. Spinning process is an initial step to produce textile layout such as garments, fabric, home textile and so on. People used to convert fibers into yarn i.e. the spinning process by hand before a couple of decades which has now been mostly replaced by advanced technology of mechanical spinning carried in textile mills. By studying processing of textile unit, we could know how the fabric produced and there are some weave structures that we can create. So, enjoying study this subject in you will know more about it and beside that exploring the textile world.
2. Whilst voluntary actions from industry are welcome, regulatory action is needed to most rapidly and effectively protect population health in the Region. Furthermore, a regulatory framework would "level the playing field" for all industry, local and international, small and large, and provide equal benefits to all sectors of society (particularly rural and poor populations).

8.6 Conclusion

- The EIA study reveals that the project is economically viable, socially acceptable and environment friendly.
- On completion of the project Extension of the processing unit (dyeing, printing, screen printing) and effluent treatment plant by Beacon Impex Pvt Ltd situated 35-km Sheikhupura Faisalabad road, Faisalabad, it will generate additional jobs opportunities for locals during operation phases.
- Project is environmentally friendly and pollution free
- The proponent has committed to implement the project in the environment friendly manner
- Project proponent has ensured to install the Waste Water Treatment Plant to treat the wastewater prior to discharge into drain or use for irrigation purposes.
- Project proponent has ensured to adopt the proper solid waste management

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- Proponent has ensured to adopt all the necessary measures to control any impact if resulting from the project
- Project proponent has ensured to provide the safe drinking water to all workers and staff
- Project proponent has prepared and implemented very comprehensive Emergency Preparedness and Response Standard Operating Procedures
- Project proponent has prepared and implemented very comprehensive Security and Fire Fighting Standards Operating Procedures

Main environmental issues are as under:

- Production of Solid Waste
- Generation of waste water
- Generation Noise
- Traffic issues
- Health and Safety issues

9.2 Recommendations

- In view of the comprehensive screening process and findings of the present study there is no need of conducting further investigations.
- Tree plantation inside and near the society is recommended.
- RO Plant recommended for the safe drinking water supply to the workers of industry
- Waste water treatment Facility should be installed.
- Proper solid waste management system should be followed according to direction of the Local Government.
- The untreated wastewater should not be reused for irrigating the vegetation and lawns without treatment.

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- High standards of bio-security and safety should be enforced during operation stage. Safety of the workers should be top priority for the management.
- Industry should continue to assist the local communities as a corporate/social responsibility.
- The present EIA report is enough to meet the administrative and legal framework. Therefore, the environmental approval may be accorded for the present project.

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ANNEXURES

Terms of Reference for Environmental Impact Analysis

1.0 Introduction

Entertech labs Pvt Ltd (Environment Division) has been asked to submit the technical proposal for this project to fulfill the legal requirements under Pakistan Environmental Protection Act 1997 (amended 2012).

Part A- Completion of EIA

2. Environmental Impact Analysis

The proponent is required to prepare an environmental assessment study and get approval from EPA prior to commencement of the project.

3. Responsibility of Consultant

The consultant would undertake surveys, conduct studies, consult with the community and compile the EIA report. The EIA should cover all likely construction and operation activities and will include, but not to be limited to, an assessment of the environmental and social impacts relating to the land.

The following tasks shall be conducted for the completion of work.

1) Procedure of Environmental Assessment

After the award of work of Environmental Assessment study, consultant will carry out following activities:

a. Kick of meeting with client to collect the requisite information regarding project i.e. Design reports, drawings, feasibility study, topographic survey etc. Site topographical surveys and underground reservoir survey reports will be shared by client.
b. Site survey and environmental monitoring of groundwater, noise, wastewater and ambient air quality.
c. Socioeconomic survey of the area.

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d. Secondary data collection from district department (Forest, drainage, meteorological)
e. Assessment of environmental and socioeconomic project and mitigation measures
f. Preparation of environmental management and monitoring plan.
g. Environmental assessment report preparation and submission to client for review and comments if any.
h. Follow up of case in EPA till its final Environmental Approval

Responsibilities of the Client

I. Provision of necessary documents and studies about the features and description of the project.
II. Provision of copy of the geotechnical study including seismic study.
III. Site topographical surveys and underground reservoir survey reports.
IV. Basic data for quantification of solid waste, water use, wastewater and its safe disposal.
V. Detail of each commercial activity and its expected magnitude.
VI. Provision of review fee for EPD.
VII. Health and safety plan.

B) Securing NOC and Approval from Govt. Departments

a. Consultant will prepare and submit a complete final Environmental Assessment report to the client along with requisite documents provided by the proponent for onward submission to EPA Punjab securing NOC.
b. Consultant, as required by environmental law, will submit the report along with bank draft of review fee in the name DG EPA, application, affidavit and undertaking provided by the client.
c. EPA Punjab raises queries on EIA report and sends to the client. At this stage, consultant will reply all the queries raised by EPA. Client/Consultant will submit the reply to EPA.

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d. After the approval of Environmental report, a notice for the committee of experts for the proposed project will be issued by EPA Punjab. Consultant will prepare and deliver presentation before committee of experts. All the questions raised by committee of experts will be responded by the consultant.
e. After committee of experts, NOC is issued to the client.
f. Consultant will facilitate the client till the issuance of NOC by concerned Government Department from EPA Punjab.

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Glossary

- **Ambient:** relating to the immediate surroundings of something
- **Base line:** Conditions prevailing at the time of study or before initiation of any project
- **Baseline:** Conditions prevailing at the time of study or before initiation of any project
- **Discharge:** means spilling, leaking, pumping, depositing, seeping, releasing, flowing out, pouring, emitting, emptying or dumping
- **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
- **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 Impact Assessment:** means an environmental study comprising collection of data, prediction of qualitative and quantitative impacts, comparison of alternatives, evaluation of preventive, migratory 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
- **Fauna:** Animal life occurring in particular region or time.
- **Flora:** plant life occurring in particular region or time.
- **Initial Environmental Examination:** means a preliminary environmental review of the reasonably foreseeable qualitative and quantitative impacts on the environment of a proposed project to determine whether it is likely to cause an environmental effect for requiring preparation of an environmental impact assessment
- **National Environmental Quality Standards:** means the permissible standards for emission of air pollutants and noise and for discharge of effluent and waste

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- **Nuisance:** A person, thing or circumstances causing inconvenience or annoyance.
- **pH:** negative log of hydrogen concentration:
- **Proponent:** the person who intends to carry-out a proposed project.
- **Sustainability:** means such developments that meet the needs of the present generation without compromising the ability of future generations to meet their needs
- **Waste:** means any material, substance, or by-product eliminated or discarded as no longer useful or required after the completion of a process

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List of Abbreviation

BOD	Biochemical Oxygen Demand
C&I	Commerce and Investment
CEPTP	Common Effluent Pretreatment Plant
COD	Chemical Oxygen Demand
DCP	Dry Chemical Powder
EIA	Environmental Impact Assessment
EMP	Environmental Management Plant
EMMP	Environmental Mitigation & Monitoring Plan
EPA	Environmental Protection Agency
EPD	Environmental Protection Department
EPO	Environmental Protection Ordinance
GOP	Government of Pakistan
GOPb	Government of Punjab
HSE	Health, Safety & Environment
HC	Horticulture Committee
IEE	Initial Environmental Examination
Kmp/h	Kilo Meter Per Hour
Km	Kilo Meter
LESCO	Lahore Electricity Company
PEQS	Pakistan Environmental Quality Standards
NOC	No Objection Certificate
NWFP	North West Frontier Province
OSHA	Occupation Health and Safety
PEPA -97	Pakistan Environmental Protection Act, 1997
PCGIP	Punjab Cities of Governance Improvement Project
PM	Particulate Matters

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PEPO-83	Pakistan Environmental Protection Ordinance, 1983
TDS	Total Dissolved Solids
TMA	Tehsil Municipal Administration
UC	Union Council
WAPDA	Water and Power Development Authority
WWTF	Waste Water Treatment Facility
WHO	World Health Organization
API	American Petroleum Institute
CO_2	Carbon dioxide
°C	Degree Celsius
M/S	Masses
INR	International normalized ratio
FY	Fiscal Year

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References

i. *Disaster Risk Management Plan, 2008*, State Disaster Management Authority, Government of Punjab

ii. Mughal M.S. and Muslim M., 2010 *RAPID APPRAISAL VEGETATION SURVEY OF MIRPUR AND KOTLI DISTRICTS OF AZAD JAMMU & KASHMIR*, Pakistan Journal of Forestry

iii. Nasir, Y.J. and Rubina, A.R., 1995, *Wild Flowers of Pakistan*, Oxford University Press, Karachi

iv. Pakistan Council of Research in Water Resources, Government of Pakistan,, *Report of the National Water Quality Management Programme, Phase I*

v. Pakistan Council of Research in Water Resources, Government of Pakistan, *Report of the National Water Quality Management Programme, Phase II*

vi. Pakistan Council of Research in Water Resources, Government of Pakistan, *Report of the National Water Quality Management Programme, Phase III*

vii. Pakistan Environmental Protection Agency, Government of Pakistan, Islamabad, *Waste Disposal Guidelines*

viii. Bureau of Statistics, Government of Pakistan, Islamabad, *Population Census of Pakistan, 1998*

ix. Pakistan Meteorological Department, Government of Pakistan, Islamabad, *Published Data*

x. Guidelines for Preparation and Review of Environmental Report

xi. Guidelines for Public Consultation

xii. Labor Laws

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xiii. Meteorology Department Data (From Website)

xiv. National Environmental Policy

xv. National Environmental Quality Standards (Self- Monitoring And Reporting By Rules, 2001)

xvi. OSHAS 1800 for Health and Safety

xvii. Environmental Protection Act, 2000

xviii. Environmental Protection Agency (Review of IEE/EIA) Regulations 2009

xix. Sectoral Guide Lines for Environmental Reports, Industrial States

xx. The Land Acquisition Act 1894

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