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EXECUTIVE SUMMARY

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Introduction

1. **The Project:** This executive summary presents an overview of the main findings of the Environmental Impact Assessment (EIA) report for the project that is M/S Jhang Fabrics (Pvt.) Limited located at 4-KM Jaranwala Road, Khurrianwala, Faisalabad.

The main objective for this textile industry is dyeing and weaving. Jhang Fabrics is producing different products for their valuable customers since more than last 15 years. The Management has adopted concentric diversification policy by adding the products and markets with the aim to achieve strategic fit. The Company is deploying best technology aimed towards innovation, minimization of waste and maximization of quality and customer satisfaction. It is also focused towards implementation of new design of internal controls system and implementation of a robust risk management system for identification and mitigation of business risks. The management is accordingly set a high priority to ensure accurate data processing, effective and efficient communication, streamlined business processes and accumulation of market intelligence. The management is accordingly set a high priority to ensure accurate data processing, effective and efficient communication, streamlined business processes and accumulation of market intelligence.

The Management is putting efforts and developing strategies for environment preservation while adopting all the possible means for environmental protection such as establishing and implementing SOPs for GHG emission reduction, waste water treatment, installation of pollutant traps and suppressing systems to control dust particles, Green Office initiative and Green energy through solar farm.

That it is essential to mention here that M/S Jhang Fabrics (Pvt.) Limited was established in the year 2011 when the owners purchased the already operational factory namely Five Star International Private Limited.

The Honourable Punjab Environmental Tribunal, Lahore has already imposed fine of Rs. 200,000/- to Jhang Fabrics for violation of Section 12 and order is annexed with this report.

2. **Scope and Objectives of the EIA:** This report is the environmental impact assessment (EIA) for the M/S Jhang Fabrics (Pvt.) Limited and complies with the environmental assessment guidelines and requirements of the Environmental Protection Agency, Punjab. The EIA has been prepared to present the environmental assessment process of the project and ensure that the potential adverse environmental impacts are appropriately mitigated. The scope

of work for the preparation of the EIA included, a detailed scoping exercise, study of the relevant baseline information, assessment of environmental impacts of the Project and its ancillary activities, assessment of the cumulative environmental impacts of the project, preparation of mitigation measures with an environmental management plan and an environmental monitoring plan.

3. **Title & Location of the Project:** The title of the project is the M/S Jhang Fabrics (Pvt.) Limited located at 4-KM Jaranwala Road, Khurrianwala, Faisalabad.

4. Name of the proponent: The name of the proponent is Muhammad Haroon Waheed.

5. Name of the organization preparing the report: The proponent engaged M & Y Environmental Consultants (Pvt.) Limited for preparing the report.

B Critical Facts

6. **Policy Legal and Administrative Framework:** The Government of Punjab has formulated and proclaimed a comprehensive policy and legal framework for environmental assessment and protection.

7. The main provisions for environmental protection and pollution control in Punjab are proclaimed in the Punjab Environmental Protection Act (PEPA), 1997

8. PEPA provides the framework for protection and conservation of species, wildlife habitats and biodiversity, conservation of renewable resources, establishment of standards for the quality of ambient air, water and land, establishment of Environmental Tribunals, appointment of Environmental Magistrates, and Initial Environmental Examination (IEE) and Environmental Impact Assessment (EIA) approval. This Act has a direct bearing on the proposed M/S Jhang Fabrics (Pvt.) Limited as the project requires an Environmental Impacts Assessment (EIA). Further, as proposed project is located mainly in the district Faisalabad, it falls under the jurisdiction of the Punjab Environmental Protection Agency which will be responsible for approval of the EIA of the project.

9. **Project Categorization for Environmental Assessment:** As per Review of Initial Environmental Examination (IEE) and Environmental Impact Assessment (EIA) Regulations, 2022 the instant project falls in Schedule II Category B. Manufacturing and Processing sub category 6. Textiles units comprising of dyeing & printing.

10. **The Project:** The proposed is regarding textile industry. Textile industry in the world is pretty much diversified. There are several countries that have a great share in this industry like China, Pakistan, Turkey, Indonesia, Bangladesh, Egypt and United States etc. Textile products are produced through a logical development of raw materials into finished goods.

Pakistan's Textile manufacturing industry comprises of group of highly interrelated industries. Textile and clothing (T&C) industries form a major part of manufacturing production, employment and trade in many developing countries like Pakistan. Textile& Cloth is one of the oldest, largest and most global industries in the world. Chemicals and dyes are very important for the textile industries. Textile dyeing enhances the properties of cloth and textile in such diverse application as high fashion, construction and fabrics for home, it also includes apparel, such as casual wear, sportswear, denim, business and work wear, non-apparel such as towels, upholstery, fabrics, vertical blinds and mattress ticking, technical textiles such as medical garments, glass grid fabrics, textiles for cars, planes and ships etc.

Faisalabad is called the Manchester of Pakistan due to its Textile industry. Textile is the life blood of Faisalabad's economy, a big portion of Faisalabad population attached directly or indirectly to the textile sector..

C Description of the Environment

11. **Land use:** The land use in the area was primarily irrigation for production of food crops for domestic consumption but with the passage of time the time has been converted into industrial area and almost on the entire area of Khurrianwala Road there are cluster of textile industries are present.

12. **Soils:** The results of soil analysis reveal that all the soils are loam, silty loam, sandy loam, and loamy sand nature. These soils are medium to loose in texture and have high water percolation rate. The samples exhibit no problem of salinity or sodicity as the pH and salt contents are within safe limits. The soil is deficient in organic matter (OM), Nitrogen (N), Phosphorus (P), and Potassium (K).

13. **Surface Water:** The major surface water resources in the area are, High Level Canal; and, bore system is the source of water for the proposed Jhang Fabrics.

14. By comparing surface water quality results with the standards set by EPA Punjab, the results of all parameters were found within the required water quality standards.

15. **Groundwater Resources:** Sweet ground water is found in the command area. As the population of the project area continues to grow, it is expected that, in future, the availability of groundwater resources shall continue to decline as further abstractions are made for irrigation and drinking water purposes.

16. **Salinity and Water Logging**: The project area has no water logging and salinity problem and most of the land in the command area is cultivated and fallow land.

17. **Air Quality:** Ambient air monitoring were carried out at seven (07) locations within the project area and NOX, SO2, CO, PM (PM2.5, PM10and TSP, SPM were found to be within the permissible limit.

18. **Noise Level:** The noise level was also analyzed along the pressure pipe and canal at locations close to sensitive receptors, and baseline noise level was within the permissible limit of NEQS and WHO standards.

19. **Protected Sites:** As per assessment during the baseline surveys there are no protected sites and protected forests within or close to the potential impact zone of the Jhang Fabrics.

20. **Tree Removal and Tree Inventory:** No tree is located on the proposed site.

21. **Flora:** There are 5 dominant shrubs and 10 tree species in and around the project area. The tree species are common and used as timber and fuelwood.

22. **Wetlands:** There are no wetlands in the project area.

23. **Avifauna:** Fifteen common birds have been reported from the area and migratory birds have been observed in the general area, though no landing zones are found within the project area.

24. **Mammals:** Five species of mammals that were recorded during the field visits are not listed as of concern in IUCN Red List.

25. **Aquatic Fauna:** No fish or fishery activity was observed within or in the near vicinity of the project area.

26. **Archaeology and Cultural Heritage:** Sites of importance in regard to cultural heritage are not reported from the specific area of the project

27. **Population:** According to 2023 Census the population of District Faisalabad is now estimated at 16,228,526.

28. **Livelihood:** In general, the literacy rate is not very high and most of the people earn their livelihood as tenants on land owned by the Khowaneen (Land-lords). However, large numbers of educated persons are employed inland or abroad and thus are adding to the prosperity of the area by sending their returns to the area.

29. **Education:** There are 41 Girl's primary schools, 52 Boy's primary schools, one Girl's middle school, 4 Boy's middle schools and 5 Girl's high schools. The numbers of male and female teachers are 314 and 180 respectively..

30. **Literacy Rate:** The literacy ratio for male is 54.0% as against 18.3% for females. The ratio is much higher in urban areas when compared with rural areas both for males and females.

31. **Potential Impacts and Mitigation-** In order to formulate practical safeguards environmental impacts were identified in the EIA process. A summary of the environmental

impacts and mitigation measures which are discussed in detail in Chapter 6 of the EIA, are presented below.

(a) **Ambient Air Quality:** Air quality may decrease as a result of the project interventions. Construction machinery, diesel generators and project vehicles will release exhaust emissions containing carbon monoxide (CO), sulfur dioxide (SO2), oxides of nitrogen (NOX), and particulate matter (PM). These emissions can deteriorate the ambient air quality in the project site and along the road leading to it. Furthermore, fuel combustion will release smoke emissions. **Mitigtion:** A mitigation regime containing 11 stipulations is proposed for mitigation of air quality deterioration.

(b) **Noise and Vibration:** Sources of noise during construction will be generators, concrete batching plants etc. Increased noise and vibration levels during construction activities can be a source of nuisance for locals and a source of disturbance to wildlife. **Mitigation:** Although there are no sensitive receptors close to the construction sites, mitigation action has been proposed to monitor and control emanation of high noise.

(c) **Surface water:** Improper disposal of solid waste or washout from concrete batching plants may contaminate the perennial sources of water. Additionally, other impurities such as oil spills from operational equipment may contaminate surrounding surface water including ponds and the nullhas, which may affect aquatic organisms and the surrounding ecosystem. Contaminated surface water also holds potential health hazards if the contaminated water is used for drinking purposes. **Mitigation:** 17 specific measures have been proposed as mitigation.

(d) **Dust Emission:** Concentrations of airborne particulate matter will result from the earthwork, lining of canal, construction of canal road, trench excavation and installation of the pressure pipes. Generation of dust from these activities is likely to be significant given the prevailing wind direction from the north to north-east. **Mitigation:** A series of mitigation measures has been recommended in Chapter 7 to minimize the impact of dust emission.

(e) **Waste Management:** It is expected that large quantities of solid waste including domestic waste, food waste, sewage (waste water), workshop waste, medical waste, packing waste, demolition material (concrete, masonry and steel gates), debris from construction sites (excess aggregate, sand etc.) and excavated material unsuitable for earth fill will be generated during Jhang Fabrics construction. **Mitigation**: Mitigation measures have been proposed considering the relevant guidelines from EPA and location specific considerations.

(f) **Traffic:** The Jhang Fabrics approach routes of the project area. Traffic movement will interrupt the local vehicular and pedestrian traffic disrupting travel to school of children on

some routes during specific periods of peak activities. Due to increased use of trucks and other vehicles on the roads in the project area elderly people, women and children will be more exposed to dangerous situations, which may lead to traffic accidents and unrest. **Mitigation:** A traffic management plan to be prepared and implemented by the contractor, inter alia, has been proposed as mitigation.

(g) **Occupational Health and Safety:** The construction activities will involve operations which pose risks to the health and safety of the contractor's staff as well as the surrounding communities. **Mitigation:** Occupational health and safety issues to be included in contraction specifications and other location specific action has been specified as mitigation.

(h) **Induced Economic Development:** It is anticipated that the influx of a migrant workforce will induce a degree of economic development. As a result of the influx of a workforce, there would be a higher demand for locally produced food, goods and services benefiting local farmers, producers, traders including small businesses within Faisalabad, such as hotels, restaurants, shops, fruit sellers, tea stalls and poultry stalls.

(i) **Employment Generation:** During the peak of works, it is estimated that approximately 500 skilled, semi-skilled and unskilled personnel will be engaged on site. It is anticipated that the project will be able to draw a large part of the unskilled workforce from within the project area. This shall depend in part on the extent to which the contractors will engage external workers. Temporary employment within the area has the potential to contribute to a reduction in local poverty.

(j) **Stakeholder Consultation:** Two rounds of public/stakeholder consultation were carried out during the preparation of the EIA. The consultations assisted in dissemination of project information among the project stakeholders and obtain their feedback with local knowledge on baseline, mitigation measures, and also perception of the PAPs regarding impact significance and their views on project interventions.

E Recommendations

32. **Environmental Management Plan:** The Environmental Management Plan (EMP) for Jhang Fabrics Project has been prepared keeping in view the anticipated environmental impacts during pre-construction, construction and operational stages of the project on the existing environmental conditions including air, soil, water, land, biodiversity and socio economic condition of the project area, and suggests appropriate measures to mitigate the potential adverse impacts and enhance the positive impacts. Mitigation measure implementation would be ensured through the implementation of the Environmental Monitoring Plan included in the EMP.

33. The EMP will be included in the contract under specific conditions making it obligatory for the contractor to carry out the works assigned in the EMP

34. **Grievance Redress Mechanism (GRM):** A GRM has been proposed to receive, evaluate and facilitate the resolution of affected people's concerns, complaints, and grievances. The GRM will provide a time bound and transparent mechanism to voice out and resolve social and environmental concerns linked to the project.

F Conclusion

35. The Environmental Impact Assessment (EIA) 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. The objective of the preparation of an environmental study is to identify how the environment is impacted and to suggest mitigating measures to reduce if not totally eliminate adverse effects of a project. It is accordingly recommended that Environmental Approval for the project should be issued by the Punjab Environmental Protection Agency subject to payment of the requisite scrutiny fee by the proponents of the projects.'

Chapter 1: Introduction

CHAPTER I: INTRODUCTION

1.1 PURPOSE OF REPORT AND IDENTIFICATION OF THE PROJECT:

Textile industry in the world is pretty much diversified. There are several countries that have a great **share in this industry** like China, Pakistan, Turkey, Indonesia, Bangladesh, Egypt and United States etc. Textile products are produced through a logical development of raw materials into finished goods.

Pakistan's Textile manufacturing industry comprises of group of highly interrelated industries. Textile and clothing (T&C) industries form a major part of manufacturing production, employment and trade in many developing countries like Pakistan. **Textile& Cloth is one of the oldest, largest and most global industries in the world.** Chemicals and dyes are very important for the textile industries. Textile dyeing enhances the properties of cloth and textile in such diverse application as high fashion, construction and fabrics for home, it also includes apparel, such as casual wear, sportswear, denim, business and work wear, non-apparel such as towels, upholstery, fabrics, vertical blinds and mattress ticking, technical textiles such as medical garments, glass grid fabrics, textiles for cars, planes and ships etc. Faisalabad is called the Manchester of Pakistan due to its Textile industry. Textile is the life blood of Faisalabad's economy, a big portion of Faisalabad population attached directly or indirectly to the textile sector.

This Report presents the Environmental Impact Assessment (EIA) for the M/S Jhang Fabrics (Pvt.) Limited at 4-KM Jaranwala Road, Khurrianwala, Faisalabad. For this purpose the proponent has decided to engage environmental consultants, M & Y Environmental Consultants (Pvt.) Limited to conduct Environmental Impact Assessment (EIA) for the construction of project. The purpose of this study is to identify the environmental baseline i.e. physical, biological and socio-economic/cultural conditions and assess all possible impacts arising during the construction and operation phase of the project and to find out appropriate measures for their mitigation, to either eliminate those impacts or to bring them to acceptable level and formulation of Environmental Management Plan (EMP) for implementation of the project in environment friendly manner.

The report is prepared by critical examine of the environmental factors which might be affected due to construction and operation of the project. This EIA provides the basis for a determination of the degree of the environmental impacts of the proposed project. The report provides relevant information, as required under the officially approved format, to help the decision makers i.e. EPA Punjab before issuing for the Environmental Approval. This report intends to

provide satisfactory mitigation measures to avoid/eliminate any chance of adverse environmental impact on the socio-cultural, economic and environmental components. This report also intends to fulfill the regulatory requirements set under Punjab Environmental Protection Act, 1997 and its consequent legislative framework for IEE/EIA including the IEE/EIA Regulations 2022 and the guidelines drafted for IEE and EIA under numerous sectorial heads. The entire set of legislative framework requires any new development project to undergo an IEE or EIA based on the categorization of the project under Schedule I and/or Schedule II.

Project Area & Total Cost of Project

Project Area	The total area of the project is 358,678 Sft.
Total Cost	Total cost for proposed project is 100 million approximately.

1.2 IDENTIFICATION OF PROPONENT

Name:	Muhammad Haroon Waheed
Designation:	Owner
Address of project site:	4-KM Jaranwala Road, Khurrianwala, Faisalabad
Proponent Address:	Canal Road, House No. 12C, Paradise Valley, District Faisalabad

1.3 ENVIRONMENTAL CONSULTANT

An Environmental Impact Assessment (EIA) study report has been prepared to identify and predict the significant environmental impacts due to project along with Environmental Impact Assessment followed by delineation of appropriate Environmental Management Plan are included in the EIA report. Management of M/S Jhang Fabrics (Pvt.) Limited has decided to conduct EIA report for the project through Environmental consultant, namely **M & Y Environmental Consultants (Pvt.) Limited,** 3rd Floor Khan Arcade Mouj Darya road, Lahore.

1.4 NATURE AND SIZE OF PROJECT

Situated in the heart of Punjab, Pakistan, Faisalabad is a key force in the global textile industry, marking its presence as the hub of textile manufacturing. Established in the 1890s and originally known as Lyallpur, Faisalabad has transitioned from a modest urban centre to become the backbone of Pakistan's textile sector. This transformation is not just about industrial

growth but also about the city's enduring legacy in the fabric of the nation's economy. Today, Faisalabad's industrial area is not merely a group of manufacturing units; it is the result of a century-long journey of innovation, resilience, and entrepreneurial spirit in the textile domain.

As per Faisalabad Regional Development Plan published by The Urban Unit, with over 8549 firms in the textile and apparel sector, Faisalabad contributes a staggering 30% to 40% to Pakistan's textile exports, highlighting its significant role in the nation's economic landscape.

Moreover, the city's vast industrial network, and housing giants like Chenab Group and Interloop Limited, showcase a diverse portfolio ranging from apparel to hosiery, playing a vital role in the global textile sector. This extensive network fuels Pakistan's economy and sets the stage for Faisalabad to influence textile trends worldwide.

Jhang Fabrics is giving valuable services to their valuable customer since more than 15 years in Dyeing & Weaving.

1.5 LOCATION OF THE PROJECT

The M/S Jhang Fabrics (Pvt.) Limited is to be located 4-KM Jaranwala Road, Khurrianwala, Faisalabad. Based on the current land use of the proposed project, the said project is not located in an ecologically sensitive area.

1.6 COMPONENTS OF THE EIA REPORT

This EIA Report presents the screening of potential environmental impacts of the project and discusses the necessary mitigation measures to eliminate or reduce the negative impacts to an acceptable level. It also describes the institutional requirements and provides an Environmental Monitoring Plan (EMP).

EIA report comprises of following chapters.

Chapter 1: **Introduction:** A description of the project including the need for the project and how the project will be undertaken.

Chapter 2: Project Description, Full description of the relevant parts of the project implementation schedules, site plans and summary of project inputs and outputs.

Chapter 3: Statutory Requirement & Standards, A description of the pertinent national legislation, regulations and policies that are relevant and applicable to the project and a demonstration of how the project conforms to these aspects.

Chapter 4: Description of the Environment, Information about the existing baseline environmental conditions of the site.

Chapter 5: Stakeholder Consultation, For the project surrounding people were visited to come to know about the project. This was the study actually to come to know how much people are willing for this project.

Chapter 6: Potential Environmental Impacts and Mitigation. An assessment of the potential impacts during both construction and operational stages of the project as well as identification of the potential mitigation measures to prevent or reduce significant negative impacts during both construction and operation stages of the project

Chapter 7: Environmental Management Plan: Recommendations made and the final conclusion of the EIA report.

Chapter 8: Conclusion and Recommendations, This chapter includes of summery overall project description and suggestions after incorporating the managing plans.

1.7 SCOPING

Scoping is the process of identifying the key environmental issues and is perhaps the most important step in an IEE. It occurred early in the project cycle at the same time as outline planning and pre-feasibility studies. Several groups, particularly decision makers, the local population and the scientific community contributed in helping deliberate the issues which should be considered, and scoping is designed to canvass their views. At this stage the option exists for cancelling or drastically revising the project, equally it may be the end of the IEE process if the impacts be found to be insignificant Once this stage has passed, the opportunity for major changes to the project is restricted.

Scoping for this particular proposal was carried out with two main objectives

- To pinpoint the problems early allowing mitigating design changes to be made before expensive detailed work is carried out.
- To ensure that detailed prediction work is carried out for important issues. So that after identifying the key issues, a full scale IEE is considered and it incorporates terms of reference for further studies.

1.7.1 Methodology

Before the scoping exercise can be fully started, the remit of the study was defined and agreed by the relevant parties depending on the institutional structure. At a minimum, those who contributed to determining the remit included those who decide whether a policy or project is implemented, those carrying out the M & Y Environmental Consultants and those carrying out parallel engineering studies relating to the proposal. Following is the step-wise methodology adopted for the scoping of subject proposal.

- The key interest groups, both government and non-government, were identified they include EPA, Multan Industrial Estate, surrounding community and workers & management of adjacent industries
- Since, the people who can be effected by the project need to hear about it as soon as possible, so, scoping session was held inviting the representatives from identified groups and briefing them about the proposal while establishing good lines of communication. Their concerns are discussed in the coming sections.
- The main IEE techniques used in scoping were baseline studies, checklists and matrices These techniques collected and presented knowledge and information in a straightforward way so that logical decisions can be made about which impacts are most significant.
- The concerns of the stakeholders were listened to and noted down. If possible, negative ones were resolved at the spot whereas others area incorporated in the LIA study and decisions are made accordingly

1.7.2 Spatial and Temporal Boundaries of Environmental Assessment

Temporal and spatial boundaries for the effects assessment are defined by the characteristics of the project and the Valued Environmental and Cultural Components (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

- A local study area (LSA), where project effects can be predicted with a reasonable degree of accuracy and confidence and impacts are likely to be most concentrated-most of the subject project impacts are local e.g. air emissions, increased noise levels, wastewater and solid waste management etc.

- A regional study area (RSA) where, depending on conditions (e.g. seasonal conditions, habitat use, more intermittent and dispersed project activities) - subject proposal does not impose any regional impacts

  Following table represents the characterization of potential impacts of subject proposal based upon the spatial boundaries;

Characterization of Potential Impacts based upon the spatial boundaries

Sr. No	Potential Impacts	Spatial Boundaries	
		LSA	**RSA**
1	Air Quality	✓	✓ (If beyond limit)
2	Increased noise Levels	✓	✓
3	Groundwater degradation	✓	✓
4	Surface water deterioration	✓	✓
5	Soil quality	✓	
6	Working Personal's health & Safety	✓	
7	Lowering of groundwater table		✓
8	Flora & Fauna	✓	✓

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, prior to the initiation of the construction phase;
- **Construction** - includes all activities associated with project construction and before commencement of operational phase such as:

- ❖ Infrastructure development;
- ❖ mobilization of equipment and supplies to the site by road and air;
- ❖ Construction of site facilities including camp, infrastructure, stockpile, waste rock storage dump, water management facilities (diversions, settling ponds, i seepage collectors) etc.

- **Camp Operations** and personal transport during construction;
- **Operations –** includes ongoing industrial processing, effluent disposal, waste management, noise levels, transport of raw materials, end products and personnel;
- **Decommissioning** – includes all activities to decommission industry and remove equipment and materials from the site, re-counter the site and restore drainage patterns to stable long-term conditions, 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 re-vegetation is complete.

Temporal boundaries are also defined for the cumulative effects assessments, spanning baseline to a point in the future, within which project effects on VECCs are predicted to overlap with effects of other projects on activities.

1.8 ISSUES AND CONCERNS RAISED DURING CONSULTATION

The representatives from nearby industries and other local community attended the scoping session. They were briefed about the objective of session, the proposal and its type, applicable regulations and potential environmental and socioeconomic impacts that can be anticipated. Following is a list of concerns raised during the session;

What are checks and balances that exists to make sure mitigation is implemented correctly and how will follow-up happen?

- Will the locals be preferred for every sort of employment-skilled or un-skilled?
- How health & safety of workers will be ensured throughout the construction and operational phase?
- What arrangements will be made for firefighting?
- How water will be conserved?

- How process solid waste and wastewater will be disposed of to not harm the environment?
- How noise levels will not be let increased?

All of these issues were sorted out during the session and recommendations are incorporated in the IEE study. However, most of the concerns were positive as the proposed industry is believed to provide employment to a lot of local people thus contributing to national GDP. Also, it will bring industrial development in the country at the time when it is already trying to cope up with economic challenges.

1.9 SIGNIFICANT IMPACTS & FACTORS TO BE DETERMINED

Substantial impacts that can be caused by the establishment of subject unit were identified and discussed with the key stakeholders. Recommendations for appropriate mitigation measures were also exchanged to be incorporated well in EIA study. Following is a summary of the determined impacts and recommended mitigations for them.

IMPACTS	MITIGATION MEASURES
Owing to construction activities; generation, suspension and deposition of particulate matter, dust, SO2, NO8 and CO emissions can cause health issues to workers	Spray by water trucks to minimize the dust. Maintenance of construction machinery shall be made mandatory. Haul-trucks carrying earth, sand, aggregate and other materials will be kept covered with tarpaulin to reduce dust pollution.
Noise generated during construction and installation of construction machinery can cause interference with speech, hearing impairment, and sleep disturbance	Engines of vehicles visiting project site will be kept properly tuned-up. Temporary noise barriers will be installed. The green zone of plants will also help reduce sound levels.
There will always be the possibility regarding hazard to health and safety of	To handle emergency medical situation, first aid facilities will be made readily

workers to occur during construction phase.	available at the site and the contractor will ensure availability of transport to handle any emergency condition. Safety equipment such as belts, gloves, masks and helmet will be made mandatory for them. Also, Health & Safety trainings will be conducted time to time.
The construction phase of the project will produce solid waste; disposal of which if not managed properly can have negative impacts on the site and surrounding area	A site waste management plan will be made the responsibility of the contractor. The construction and Demolition (C & D) waste will be properly segregated to encourage recycling of useful waste materials. The involved stakeholders will be trained about the importance and means of waste management and its proper handling.
Lack of proper disposal system of solid waste may lead to different disease	Arrangements will be made for regular garbage collection and removal from the construction site.
Ground water quality can be contaminated when the pollutants, such as diesel and oil, paint, solvents, cleaners and other harmful chemicals, on construction sites soak into the groundwater	Effective management will be ensured during construction activities and any sort of accidental spillage will be avoided.
No negative impact on ecological environment will take place on account	Currently there is no flora and fauna are present at project site. Landscaping is deemed to be a powerful mitigation

of cutting of trees in the project area and clearing of vegetation from the site.	activity with a positive impact. Trees and ornamental plants will be planted along the project boundary to increase the aesthetic value of the site and combat pollution.
A number of categories of employees will be required during the construction phase which will have positive impact on the local community economy and regional unemployment	Socially responsible attitude of the project management towards local people and resources will make project people friendly. Awareness and educational program introduced in the area by project management will reduce the fear among the people regarding non-local people
There will be slight increase in traffic due to transportation of raw material and final product. As a result, concentrations of emissions of flue gases will increase. Also, diesel fired generator may cause emissions	Proper maintenance and tuning of the vehicles will be done by proponent. Proposed site is in the area where there is less load shedding, so, generator only use to handle emergency condition. Generators will be maintained well in time to avoid emission of black smoke. Plantation will be done along the boundary walls will help protecting the environment.
The movement of transportation vehicles and running of generator can cause slight increase in noise levels. Operation of machinery e.g. cutting, and welding of sheets will cause noise emission.	The machinery to be used in the plant is noise-free. However, the vehicles and generator will be kept well maintained and Strict rules will be made by the project administration to control speeds of vehicles.

	Use of Personal Protective Equipment's will be used to reduce the noise impact on surrounding environment.
There will always be the possibility regarding hazard to health and safety or workers to occur during operational phase of the project.	The workers working near operating machines or high noise zone will be made sure to wear personal protection equipment. Irrelevant workers and visitors shall also be directed to wear personal protective equipment. Noise absorbing paint will be used on indoor walls to minimize its impacts on outer environment. To handle emergency medical situation, first air facilities will be made readily available at the site and the contractor will ensure availability of transport to handle any emergency condition.
The improperly managed solid waste may impact the factory surrounding aesthetically, occupationally as well as from health, safety and environment point of view.	The approved vendors shall collect the solid waste on daily basis. Domestic waste will be handle properly by industrial management.
The wastewater of the proposed unit, if disposed of without any treatment, can cause water pollution and soil contamination if seeped through.	The major usage of water during operational phase if for the domestic use only. There is not any water used in during the process. So, there is no wastewater generated during the process. The domestic wastewater produce will be disposed to internal drain after treated by septic tank.

Operational phase impacts are likely to be restricted to maintenance activities within the Site such as vegetation clearing through brush cutting from the internal road network.	The process of plantation should be kept sustainable throughout project life. Proponent ensure the plantation around the project vicinity and in surrounding of project site.
A number of employees will be required in operational phase and it will have a positive impact on the local economy and regional unemployment.	The management of the project can capitalize positive attitude of people of study area towards this project by offering them maximum employment opportunities. Measurements and steps should be taken to keep undisturbed the privacy of adjoining workplaces.

Following is the criteria adopted for determining significance of the potential impacts such as acceptability and mitigation measures requirement in relation to Ecological importance, Social importance, and Environmental Standards;

Criteria for Significance of Impacts

Categories	Impact	Characteristics
Nature	Direct	The environmental parameters are directly affected by the project construction or operation.
	Indirect	The environmental factor changes as a result of alteration in another parameter.
Duration of Impact	Short Term	The impacts that last only during the construction of the impact proposed Project e.g., noise from construction activities.
	Medium Term	Lasting for a period of few months to a year; the project before naturally returning to the original condition such as loss of vegetation due to clearing of

		campsite. Contamination of soil or water by fuels or oil.
	Long Term	Lasting for period much greater than medium term impact before naturally reverting to the original condition such as loss of soil due to erosion.
Geographical Extent	-----	The geographical extent may be local or regional.
Project Phases	-------	Pre-construction Phases (designing), Construction Phases, Operational Phases
Reversibility of Impact	Temporary	The impacts that don't cross ecosystem threshold value of resilience.
	Permanent	The impacts that exceed ecosystem threshold value of resilience
Likelihood of the impact	Likely	Impact will probably occur under most circumstances.
	Unlikely	Impact could occur at some time
	Possibly	Impact may possibly occur at some time
	Rare	Impact may occur but only under exceptional circumstances.
	Major	When an activity causes irreversible damage to a unique Environment Feature; causes a decline in abundance or change in distribution over more than one generation of an entire population of species of flora or fauna; has long term effects (period of months) on socioeconomic activities of significance on regional level.

Impact Consequence Severity	Moderate	When an activity causes long-term (period of years) irreversible damage to a unique Environment Feature; causes a decline in abundance or change in distribution over more than one generation of an entire population of species of flora or fauna; has long term effects (period of months) on socioeconomic activities of significance on regional level.
	Minor	When an activity causes short term irreversible damage to Environment Feature; causes a decline in abundance or change in distribution over more than one generation of an entire population of species of flora or fauna; has short on socioeconomic activities of significance on regional level.
	Negligible	When no measurable damage to physical, socioeconomic, or biological environment above the existing level of public concern; and conformance with legislative of statutory requirement.

Following table represents the significance of determined impacts based upon above given criterion;

Significance of the Potential Impacts

Category	Impact Significance	Potential Impacts						
		Air Quality Deterioration	Increased Noise Levels	Lowering of Groundwater Table	Surface Water Degradation	Soil Quality	Health & Safety	Flora & Fauna
Nature	Direct		✓	✓	✓		✓	
	Indirect	✓						✓
	Short Term		✓					

Duration of Impact	**Medium term**	✓				✓	✓	✓
	Long Term			✓	✓			
Geographical Extent Project Phases	**Local**	✓	✓		✓	✓	✓	✓
	Regional			✓				
Reversibility of Impact	**Temporary**	✓	✓		✓	✓	✓	✓
	Permanent			✓				
Likelihood of the Impact	**Likely**	✓					✓	
	Unlikely							
	Possibly		✓					✓
	Rare			✓	✓	✓		
Impact Consequence Severity	**Major**			✓	✓	✓		
	Moderate		✓				✓	
	Minor	✓		✓				✓
	Negligible				✓	✓		

1.10 SCREENING:

As per Review of Initial Environmental Examination (IEE) and Environmental Impact Assessment (EIA) Regulations, 2022 the instant project falls in Schedule II Category B. Manufacturing and Processing sub category 6. Textiles units comprising dyeing & printing.

Chapter 2: Project Description

CHAPTER 2:

DESCRIPTION OF THE PROJECT

General

This section of the study renders a detailed account of the project and its salient features, such as location and various phases, Inputs and discharges relevant to different phases of the project, such as electricity & materials etc. have also been examined as a response to possible environmental concerns.

2.1 TYPE AND CATEGORY OF PROJECT

As per Review of Initial Environmental Examination (IEE) and Environmental Impact Assessment (EIA) Regulations, 2022 the instant project falls in Schedule II Category B. Manufacturing and Processing sub category 6. Textiles units comprising dyeing & printing.

2.2 OBJECTIVE OF M/S JHANG FABRICS (PVT.) LIMITED

The objective of this project is to make affordable and user-friendly products that everyone can use. To fulfill this, we constantly strive to provide our customers with innovative, competitive and sustainable solutions, and in order to reduce the impacts on environment, while always taking patient needs into account. With our experience and technology, we can assist our customers at any and every stage of the development process to help ensure the product's success. We are deeply committed to the success of our customers.

2.3 ALTERNATIVES CONSIDERATIONS

As the unit is operational since last more than 15 years in the area where there is cluster of textile industries are present therefore there is no need to discuss this section.

2.4 LOCATION PLAN/MAP

Project is in the ideal location that is far away from the population. Exact location of the project is 4-KM Jaranwala Road, Khurrianwala, Faisalabad.

2.5 LAND USE ON THE SITE

The area is industrial in nature and is surrounded by agricultural fields. There is no residential settlement in close proximity of the project location.

2.6 ROAD ACCESS

Main G.T Road (Lahore-Faisalabad) is best and easy access for the project site.

2.7 VEGETATION FEATURE ON THE SITE

The site is barely having any flora or vegetation on the site. There are no trees inside the site. Near the project location there is no environmental sensitive one, protected area. There is no flora and fauna present in the project location. One of the main significance of non-existence of the flora is that site is located in the industrial cluster.

2.8 COST AND MAGNITUDE OF OPERATION AND ASSOCIATED ACTIVITIES

Cost of the project is approximately 100 million from the construction to the implementation and operational machinery, instruments & equipment is included. Project is environmentally friendly will be erected in a sustainable way to reduce and minimize the harmful impacts generated during the construction and operational phase. Meanwhile the proponent will be responsible for the monitoring of the site during whole construction period. So any adverse distresses should be removed or reduced at the level of PEQs.

2.9 PROPOSED SCHEDULE OF IMPLEMENTATION

Project implementation schedule drive on the basis of calculated quantities of works to be done and duration that is required to design, fabrication, supply and installation of major project components. It is estimated that the completion of construction phase of entire project will be started after getting environmental approval from EPA, Punjab.

Activities involved are:

- Land acquisition
- Lay out plan of project (attached herewith this EIA report)
- Leveling of land
- Construction of M/S Jhang Fabrics (Pvt.) Limited

2.10 PROCESS DESCRIPTION

There is two sections of Jhang Fabrics which is elaborated below separately;

1. Dyeing
2. Weaving

DYEING PROCESS

The raw material grey mending, not only contains impurities, including warp size, but requires further treatment in order to develop (dye or print) the cloth according to the market requirement. Furthermore, it may receive considerable added value by applying one or more finishing processes. Over all process detail of propose project will be following.

Desizing: Desizing is the process of degrading sizes (impurities) on cotton fabrics using desizing agent i.e. Desizing, irrespective of what this is, involves impregnation of the fabric with the desizing agent, allowing the desizing agent to degrade the size material, and finally to wash out the degradation products depending on the sizes that has been used, the cloth may be steeped in a diluting agents and then rinsed, or enzymes may be used to break down the size.

Scouring: Scouring, is a chemical washing process carried out on cotton fabric to remove natural wax and non-fibrous impurities (e.g. the remains of seed fragments) from the fabrics and any added soiling or dirt. Scouring is usually carried in iron vessels called kiers. The fabric will be boiled in an alkali, which will form soap with free fatty acids (saponification). A kier is usually enclosed, so the solution of sodium hydroxide can be boiled under pressure, excluding oxygen which would degrade the cellulose in the fabrics. If the appropriate reagents are used, scouring will also remove size from the fabric although desizing often precedes scouring and is considered to be a separate process known as fabric preparation. Preparation and scouring are prerequisites to most of the other finishing processes. At this stage even the most naturally white cotton fabrics are yellowish, and bleaching, the next process, is required.

Bleaching: Bleaching improves whiteness by removing natural coloration and remaining trace impurities from the cotton; the degree of bleaching necessary is determined by the required whiteness and absorbency. Cotton being a vegetable fiber will be bleached using an oxidizing agent, such as dilute sodium hypochlorite or dilute hydrogen peroxide. If the fabric is to be dyed a deep shade, then lower levels of bleaching are acceptable. However, for white bed sheeting and medical applications, the highest levels of whiteness and absorbency are essential.

Mercerizing: The process after bleaching, mercerizing espouse in which fibers of stuff swells. This process results in improved luster, strength and dye affinity. Fabric will be mercerized under stiffness, and all alkali must be washed out before the tension will be released or shrinkage will take place. Mercerizing can take place directly on grey cloth, or after

bleaching. Many other chemical treatments may be applied to cotton fabrics to produce low flammability, crease resist and other special effects but four important non-chemical finishing treatments are:

Singeing: Singeing is designed to burn off the surface fibers from the fabric to produce smoothness. The fabric passes over brushes to raise the fibers, and then passes over a plate heated by gas flames.

Raising: Another finishing process is rising. During rising, the fabric surface will be treated with sharp teeth to lift the surface fibers, thereby imparting hairiness, softness and warmth, as in flannelette.

Calendering: Calendering is the third important mechanical process, in which the fabric will be passed between heated rollers to generate smooth, polished or embossed effects depending on roller surface properties and relative speeds.

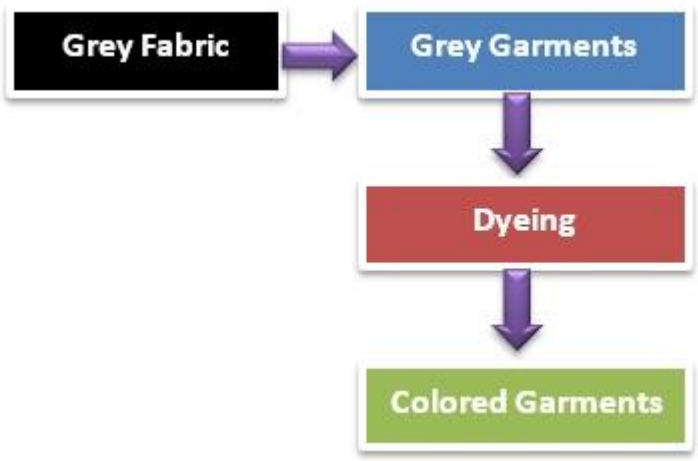
Shrinking (Sanforizing): Finally, mechanical shrinking (sometimes referred to as sanforizing), the fabric will be forced to shrink width and/or lengthwise, will create a fabric in which any residual tendency shrink after subsequent laundering will be minimal.

Dyeing: Finally, gray fabric is an absorbent fabric which responds readily to coloration processes. Dyeing, for instance, is commonly carried out with an anionic direct dye by completely immersing the fabric in an aqueous dye bath according to a prescribed procedure. For improved fastness to washing, rubbing and light, other dyes such as vats and reactive are commonly used. These require more complex chemistry during processing and are thus more expensive to apply.

Printing: Printing, on the other hand, is the application of color in the form of a paste or ink to the surface of a fabric, in a predetermined pattern. It may be considered as localized dyeing. Printing designs onto already dyed fabric is also possible.

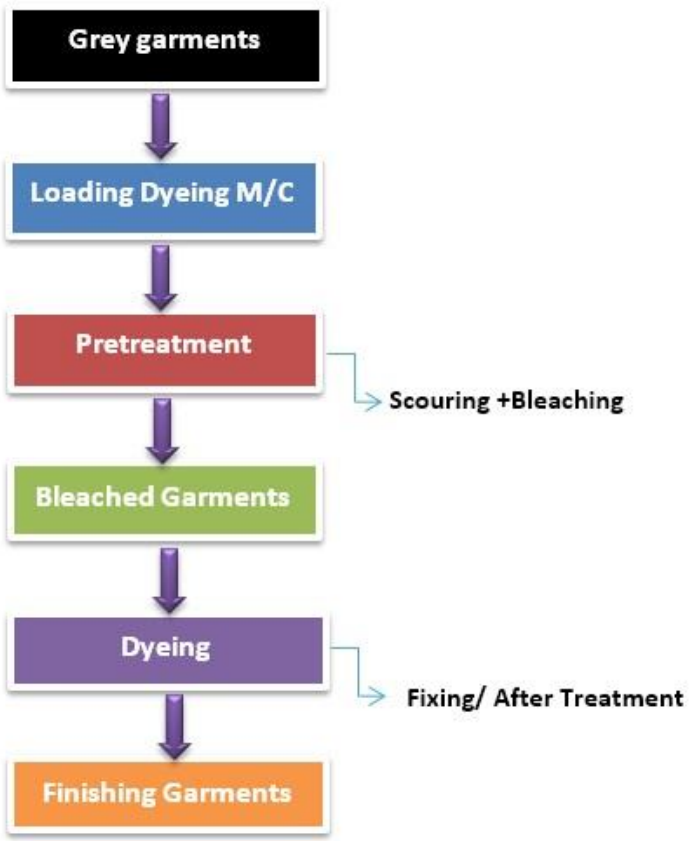
Process Flow Diagram of Dyeing Process

Basic Dyeing Process of Garments/Flow Chart



The mainly dyeing process is applied on grey fabric and after completing the whole process we get colored fabric. But remember one thing that after Dyeing you have to wash your fabrics.

Flow Chart of Apparel Dyeing



If closely see the flow process of complete Dyeing of fabric, then you may identify the following procedure. Earlier I said that the Dyeing process starts with grey fabrics/garments then loading into the Dyeing machine, after that pre-treatment and bleaching garments, then Dyeing, fixing (after treatment), and finally, we will get finished dyed fabrics.

WEAVING PROCESS

Weaving is a method of fabric production in which two distinct sets of yarns or threads are interlaced at right angles to form a fabric or cloth. The other methods are knitting, lace making, felting, and braiding or plaiting. The longitudinal threads are called the warp and the lateral threads are the weft or filling. (*Weft* or *woof* is an old English word meaning "that which is woven".) The method in which these threads are inter woven affects the characteristics of the cloth.

Cloth is usually woven on a loom, a device that holds the warp threads in place while filling threads are woven through them. A fabric band which meets this definition of cloth (warp threads with a weft thread winding between) can also be made using other methods, including tablet weaving, back-strap, or other techniques without looms.

The way the warp and filling threads interlace with each other is called the weave. The majority of woven products are created with one of three basic weaves: plain weave, satin weave, or twill. Woven cloth can be plain (in one color or a simple pattern), or can be woven in decorative or artistic designs.

Purposes

The purpose of this procedure is to:

- To monitor the products during all process
- To check the effectiveness of the process

Scope

This procedure is applicable to the monitoring of the process from the start to the end during all processes of product development.

Process started from customer inquiry for requirement duvet covers, pillow covers in piece or sets. After that Pre-costing against customer inquiry started. Then quote price on quotation and send to customer against their inquiry. After quotation process, customer's contract (with variable information like construction **Procedure** / quality, color, design, packaging, sizes so

on) has been created. After contract's agreement, procurement department make sure availability of yarn and other required chemical against particular sale contract.

Some pieces as sample are sent to customer for their approval and after approval by customers weaving process of the order is started.

Weaving:

Most of the machines in the weaving unit of JHANG FABRICS are of new technology & JHANG FABRICS has a very good check on the quality of fabric produced by its Quality Control department.

The end product of the spinning unit is the starting point of the weaving unit. When the cones of the yarn are brought to weaving unit, it is then taken to the warping zone in which the beams are prepared. These beams are then taken to the sizing section where the different chemicals are applied to the yarn so that the weaving of the fabric can be done with the minimum breakage of yarn. After sizing the process of drawing inn is applied so that the yarn could be converted into fabric.

After the drawing inn the beams of the yarn is then taken to the Sulzer Looms so that the yarn is converted into the weaved product. When the greige is made, then it is taken to the inspection department, where a lot of quality check is done. At the first step the fabric is classified into two types, i.e. A grade & D grade. The D grade fabric is either used in the B grade sale or in gathering of the fresh pieces. While the process of A grade fabric is a bit longer.The A grade fabric after mending, goes to the checking machines, from where it is taken to the rechecking machines. After rechecking either the greige is rolled or folded & packed according to requirements of the buyer.

During all the above process, quality is the main purpose of the JHANG FABRICS Management. The weaving units of JHANG FABRICS check the product quality as under:

Quality Control Department

First of all the people of JHANG FABRICS checks the quality of yarn before taking it into the process. Following are the yarn characteristics that are checked before taking it into the process:

- Count Testing
- Strength Testing
- TPI

- Hairiness Testing
- Thick & Thin bases

At the warping section the following characteristic is checked:

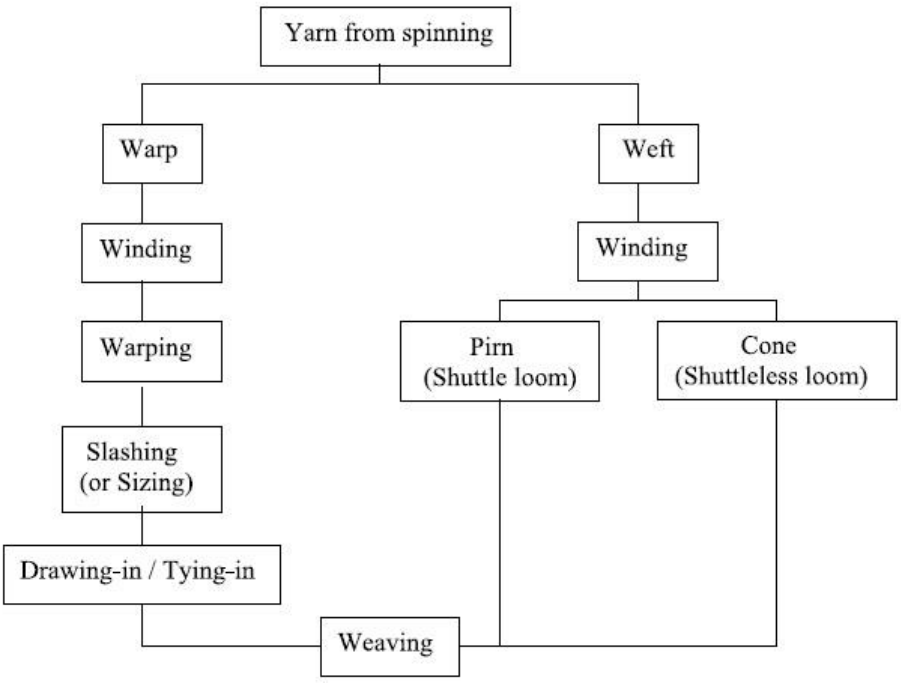
- Breakage Report

When the sizing process is applied, the following two tests are applied:

- Abrasion Test
- Strength Test

After completion of the greige the g/sm test is applied so that to have the best customized product. Finally in the folding section checks are applied at every step of the folding process. The weaving units of JHANG FABRICS are known to be the best producers of greige product in Pakistan.

Process Flow Diagram of Weaving Process



2.11 LIST OF MACHINERY

The details of Machinery and equipment are attached here with the report as annexure.

2.12 MAN POWER REQUIREMENT

The expected total number of labors/workers required for the construction is 10. Staff members of different categories will be employed at different points in time during construction phase of the project including professional/technical staff, administrative/managerial and support staff, skilled and unskilled labor. There will be one supervisor and one engineer at the site. In addition, the architect will be the consultant of the project on behalf of the proponent. During operational of the plant about 16 persons in different categories would be required for operation and maintenance purposes.

2.13 DESCRIPTION OF WASTEWATER TREATMENT PLANT OF PROPOSED PROJECT

Textile wastewater includes a large variety of dyes and chemical additions that make the environmental challenges for textile industry not only as liquid waste but also in its chemical composition. Main pollution in textile wastewater comes from dyeing and finishing processes. These processes require the input of a wide range of chemicals and dyestuffs, which generally are organic compounds of complex structure. Water is used as the principal medium to apply dyes and various chemicals for finishes.

Equalization Tank

The untreated effluent after screening will be received in a collection cum equalization tank to even out fluctuations in flow rate, composition and improve the performance of the downstream processes.

Flash Channel

The effluent shall be pumped to the flash channel wherein optimum amount of flocculent (ferric chloride) and polyelectrolyte will be dosed to improve settling of suspended solids, particularly fine and colloidal particles.

Primary Clarifier

The flake formed will be separated in the primary clarifier as sludge while clarified Wastewater will flow to the aeration tank. Sludge from the bottom of the tank will be intermittently discharged to sludge holding tank.

Aeration Tank

The pre-treated effluent shall be pumped to the Aeration Tank for biochemical degradation of dissolved organic contaminants by aerobic biomass through aeration process. The untreated effluent is aerated by Diffused – Air Aeration system in Aeration Tank. The Diffused – Air Aeration System consist of diffusers submerged in wastewater, blowers and appurtenances

through which the air passes In Aeration Tank, bacteria and other micro-organisms consume biodegradable organic contaminants. In order to make up any deficiency in the essential nutrients, nitrogen and phosphorus in the form of Urea will be added in aeration tank.

Secondary Clarifier

The biodegraded over flow shall be let through a clarifier for separation of bio sludge.

The sludge will be pumped back to the Aeration Tank to maintain quantity of biomass and a part of sludge collected at the bottom will be diverted to the sludge holding tank. Treated Effluent from secondary clarifier shall be collected in supernant sump from where it will discharge off to the drain.

Sludge Holding Tank

Sludge from the primary & secondary clarifiers shall be transferred to the sludge holding tank which is divided into two sections for the collection of primary and bio sludge separately. The sludge handling system option is considered by the client.

Supernatant Sump

Treated effluent from the secondary clarifier will be discharged to the supernatant sump from where the treated effluent will be discharged off to the outlet drain.

Sludge Handling

Sludge from the sludge holding tank will be pumped to the Filter Press, where it will be dewatered by applying the pressure whereas the dewatered sludge will be disposed off while the filtrate will be recycled to the Equalization Tank from where it will be treated.

Air Supply System

Air blowers will be installed in a room near the Aeration Tank. These air blowers will be operated to provide the air in aeration tank and equalization tank according to effluent characteristics.

Demonstration of the WWTP

The objective of the treatment system shall be to bring the values of untreated effluent within the limits given in PEQS for inland waters, as promulgated under Pakistan Environmental Protection Act 1997. The design of the proposed project of Waste Water Treatment Plant has following specifications;

Demonstration of the WWTP

1	Untreated Effluent Nature	Textile Processes
2	Operating Hours per Day	24
3	Untreated Effluent Temperature	≤ 36 0C (Max)
4	Plant Capacity	4080 m3/day

Source of Energy for Proposed Plan:

Boiler based energy will be used for the proposed plan. A Boiler is a closed vessel in which water or other heat is produced. The fluid does not necessarily boil. The heated or vaporized fluid exits the boiler for use in various processes or heating applications including power based power generation, production, dying etc. The boiler will of 20 tonn (WHRB). There is Bituminous coal / or other alternatives will be used, mass contents in % are following:

Fuel for Boiler

Fuel	**Mass Contents in %**			
Coal **Bituminous coal**	Carbon in dry material	Sulphur	Ash	Water
	60-70	2	5	30-60

Emission of Gases from Boiler:

Gases will emit from the boiler will be PM, NOx, SOx, CO_2 etc. There will be cyclones which will comprise on 20 tubes; each tube will be of 2.5 inch will let down the PM. There will be fly ash arresters and scrubbers to control the gases of boiler and it will be efficient in such manner that will keep the gases within the PEQs values.

2.14 SOLID WASTE GENERATION

Waste generated during construction would include mostly construction material (mainly steel and wood) empty cement bags, excavated earth and general packaging waste. Waste will be stored within the site until transfer to the waste disposal site. Reusable construction material will be recovered from the waste as much as possible. There will be domestic waste in operational phase. Domestic waste will be comprised on wrappers, plastic bags, ruff papers etc. The quantity of solid waste during construction phase will be around 2-3 kg per day while during operational phase, 5 kg per day weight will be produced which will be removed on daily basis by sanitary workers of that area. During operational phase waste might be of raw material by which final product will be prepared. That material will be sold out in the market.

2.15 ELECTRICITY -

WAPDA will be the only source of electricity for this project.

2.16 STAFFING

The skilled staff members (16 in numbers) will be hired with respect to concerned department, for labor and administrative purpose according to their qualification experience.

2.17 SECURITY AND EMERGENCY EXITS

The lay out is designed keeping view of security and it would be maintained according to policy of the company executing the project. Emergency exit passages is made and maintained. A proper evacuation plan is formulated to cope with any emergency situation. Assembly points will be set and displayed and proper training will be provided to the workers and staff.

2.18 FIRE FIGHTING SYSTEM

The firefighting system will include water and gas extinguishers. Plant will establish a proper firefighting system. Indoor and outdoor fire hydrants will be installed according to the codes and standards. Fire water storage tank will be constructed at the back side of plant. 5 fire Hydrants will be installed at the boundary walls of plant.

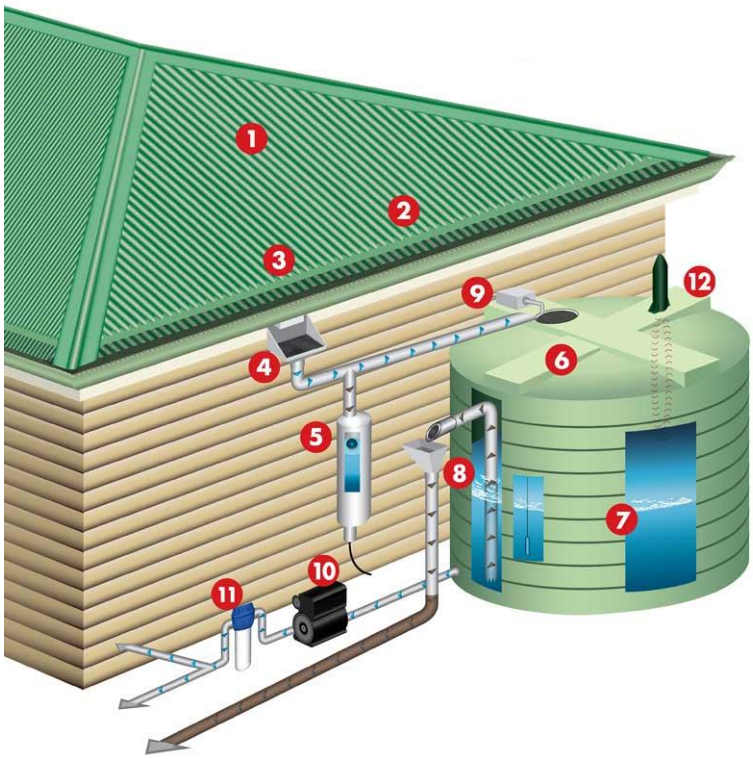
2.19 RESTORATION AND REHABILITATION PLAN:

The process or procedure to return the land at its former state is land rehabilitation. The said project is in the far away where no residential population exists even more the project is not located in any sensitive zone. It is open land which is feasible location for the project. So by

considering project from all aspects, it has been concluded that project is environment friendly from all aspects and no need for rehabilitation or restoration.

2.20 RAINWATER HARVESTING SYSTEM

The image below shows a complete rainwater collection system. While some of the components shown are absolutely necessary, not all of the components listed are required. Although, all of these components will help create a harvesting system that is highly functional and nearly maintenance-free.



- It all starts with your ROOF SURFACE. Nearly all roof surfaces are fine for rainwater harvesting.
- Gutters should have some sort of GUTTER PROTECTION SCREENING in order to keep large debris from entering the gutters.
- Collect rainwater from any type and shape of GUTTER. You do not need a special gutter for harvesting rainwater.
- An additional filtration opportunity is with the installation of a RAIN HEAD (downspout filter) that allows for a bit of self-cleaning filtration options.
- A FIRST-FLUSH DIVERTER helps to prevent the first flush of contaminated rainwater from entering the tank.

- Another rainwater filtration opportunity is with a TANK SCREEN that is installed on the tank entry point. It also helps to keep mosquitoes and pests out.
- RAINWATER TANKS come in all sorts of sizes and materials. Click to learn more about all the various types of rainwater harvesting tanks available on the market.
- Install an INSECT PROOF FLAP VALVE on the end of the overflow pipe to keep mosquitoes and pests out.
- An AUTO-FILL SYSTEM can be installed to keep a minimum amount of water in the tank at all times. This is very important for rainwater tanks that are connected to automatic irrigation systems in order to prevent the pump from running dry.
- Select a PUMP SYSTEM to provide pressurized rainwater to distribute the rainwater easier or to connect to an inground irrigation system.
- Install an IRRIGATION FILTER inline after the pump in order to catch any large debris that may have gotten through the pump.
- A WATER LEVEL INDICATOR can be helpful with monitoring the water usage from the tank. Those are available in simple gauge tank options along with wireless digital options.

The rainwater shall be used for horticulture or construction purposes.

Chapter 3: Policy, Legislation, Legal and Administrative Framework

CHAPTER 3:
STATUTORY REQUIREMENTS

3.1 General

Sustainable development and green economy is a concept that has emerged over the past decades to describe a new framework aimed at economic and social development while maintaining the long term integrity of the ecological system and environmental resources. The principal of sustainable development is in the process of being incorporated into the national policy and legislation through various statutory instruments. This chapter describes the current legal responsibilities of the proponent in context of environmental and sustainable development, and the institutions that exist in the country that may influence the environmental management of the project.

This section deals with the current policy as well as legal and administrative framework related to carrying out of Environmental Impact Assessment (EIA) of the project. An efficient and effective organizational structure is essential for successful implementation of the mitigation measures identified for the project. Like other projects, the project, before its implementation, is required to go through an Environmental Assessment, in accordance with the provisions of the Punjab Environmental Protection (Amendment) Act 2012.

3.2 Existing Legislation and Legal Framework

The Federal Ministry of Environment was responsible authority for policy making on environmental protection in Pakistan but after 18th Amendment in the Constitution, the Provincial Governments have taken over the subject of Environment. This IEE study has been carried out in the light of the policy guidelines of the Preparation of IEE/EIA Reports under the procedures and practices formulated by the Pak EPA and adopted by the Punjab Environmental Protection Agency (EPA).

3.3 Institutional Setup

3.3.1 Environmental Protection Councils

The Punjab Environmental Protection Council (PEPC) is the apex decision-making body of Punjab. It has been developed under the provision of Punjab Environmental Protection (Amendment) Act 2012. It is headed by Chief Minister of Punjab with other members. The purpose of IEE is basically to obtain Environmental Approval from the Environmental Protection Agency (EPA), Punjab in compliance with Pakistan Environmental Protection Act

(PEPA) - 1997, now having been replaced by Punjab Environment Protection (Amendment) Act 2012.

3.3.2 Environmental Protection Agencies

Pak EPA has been established at the Federal level and EPAs are established at Provincial level also. In Punjab an independent Environmental Protection Agency is constituted headed by the Director General.

3.3.3 Environment Protection Department, Punjab

The Punjab Government has established Environment Protection Department (EPD) administratively controlled by the Secretary, Government of Punjab. The EPD has its independent Minister. According to the provisions of the Punjab Environmental Protection (Amendment) Act, 2012, EPD has a significant role in policy making and implementation of the environmental laws in the Punjab Province.

3.3.4 Relevant Legal / Institutional Framework

The applicable laws for the environmental study of the project are briefly given below. The proponent of the project will abide by the applicable laws and regulations.

A number of laws have been promulgated by the Government of the Pakistan to deal with the environmental and social aspects related to the implementation of various development projects in the country. In 1983, the Government of Pakistan issued an Environmental Protection Ordinance (EPO) that was replaced by the PEPA, 1997, through an Act of Parliament. According to the 18th Amendment in Constitution, the PEPA 1997 has been confined to Federal Area and provinces have been allowed to formulate their own environmental legislation in the subject of environment.

Under the PEP Act, it is mandatory to carry out IEE or EIA for all development projects. The Pak EPA has also framed guidelines for environmental assessment of projects in various developmental sectors, According to PEPA 1997; the Punjab Environmental Quality Standards (PEQS) were established for effluents discharges and gaseous emissions of various Municipal and Industrial sources. The latest revision of PEQS as carried out in year 2016.

Provincial Environmental Protection Departments are also working on the formulation and enforcement of environmental statutes and by-laws. The Pak EPA has issued several policies guidelines and adopted measures for streamlining the environmental assessment. Though, the need for environmental screening and assessment has received some weight during the recent

past, strict implementation of the NEQS is still a dream to be realized. The applicable laws for the environmental study of the Project are briefly described below:

3.4 Pakistan Environmental Protection Order (PEPO) 1983

In 1983, the Government of Pakistan issued an Environmental Protection Ordinance (EPO) 1983. It was the first legislation promulgated for the protection of environment. According to PEPO, 1983 it was necessary to carry out IEE / EIA for all development projects, but there were no IEE / EIA regulations under that ordinance.

3.5 Punjab Environmental Protection (Amendment) Act 2012

Section 12 of the Punjab Environmental Protection (Amendment) Act 2012 makes it mandatory for the proponent of a project to file with the Environmental Protection Agency either an Initial Environmental Examination (IEE) or Initial Environmental Examination (IEE), as the case may be, in respect of the project.

As per definition given in the Punjab Environmental Protection (Amendment) Act 2012, Initial Environmental Examination (IEE) means an environmental study comprising collection of data, prediction of qualitative and quantitative impacts, comparison of alternatives, evaluation of preventive, mitigation, and compensatory measures, formulation of environmental management & training plans & monitoring arrangements, and framing of recommendations and such other components as may be prescribed. The provision of Section 12 has been incorporated “as it is” in the new Punjab Environmental Protection (Amendment) Act, 2012.

3.6 National Environmental Policy 2005

Government of Pakistan has notified National Environmental Policy 2005, for different projects/aspects in which guidelines/priorities have been given to undertake/commence the projects having significant environmental impacts.

The National Environmental Policy (2005) provides a framework for addressing the environmental issues (particularly pollution of fresh water bodies and coastal waters, air pollution, lack of proper waste management, deforestation, loss of bio diversity, desertification etc.) confronting Pakistan. It recognizes the goals and objectives of the Pakistan National Conservation Strategy (PNCS, 1992), National Environmental Action Plans, and other existing environment related national policies, strategies, and action plans. It also provides broad guidelines to the Federal Government, Provincial Governments, federally administrated

territories and local governments to address their environmental concerns and to ensure effective management of their environmental resources.

3.7 Review of IEE / EIA Regulations 2022

The Pak EPA has issued Review of the Initial Environmental Examination and Environmental Impact Assessment Regulations 2022, to review the Initial Environmental Examination (IEE) / Environment Impact Assessment (EIA) reports. Categorization of the projects for IEE and EIA is one of the main components of the Regulations. Projects have been classified on the basis of expected degree of adverse environmental impacts. Projects type listed in Schedule I are designated as potentially less adverse effect, schedule I projects require an IEE and projects given in schedule II require EIA to be conducted.

Salient features of the Regulations are listed below:

- Categories of project requiring IEE and EIA are issued through two schedules attached with the regulations.
- A fee depending on the cost of the project has been imposed for the review of IEE and EIA.
- The submittal is to be accompanied by an application in prescribed format included as Schedule IV of the Regulation.
- The EPA is required to issue conformation of compliance within 15 days of receipt of request and complete documentation.
- The IEE / EIA approval for construction of the project will be valid for three years from date of accord.

3.8 Guidelines for the Preparation of IEE/EIA Reports

The Pak EPA has also framed Guidelines for the Preparation of IEE / EIA of projects in various developmental sectors.

3.9 The Punjab Local Government Ordinance, 2001

Schedules 4 and 8 of this Ordinance pertain to environmental pollution. There are not withstanding any specific provisions, every local government may perform functions conferred by or under the Punjab Local Government Ordinance, 2001, and in performance of such functions may exercise such powers, which are necessary and appropriate. Under the ordinance, the local councils are authorized to restrict projects causing pollution to air, water or land. They may also initiate schemes for improving the environment.

3.10 Pakistan Penal Code, 1860

This defines the penalties for violations concerning pollution of air, water bodies and land. Sections 272 and 273 of this Act deal with the adulteration of food or drink. Noise pollution has been covered in section 268, which defines and recognizes noise as a public nuisance. "A person is guilty of a public nuisance who does any act or is guilty of an illegal omission which causes any common injury, danger of annoyance to the public or the people in general who dwell or occupy property in the vicinity, or which must necessarily cause injury, obstruction, danger or annoyance to persons who may have occasion to use any public right".

3.11 The Land Acquisition Act, 1894

The Land Acquisition Act (1894) deals with the acquisition of private properties for public purposes. There are 55 sections in this Act mainly dealing with area notification, surveys, acquisition, compensation, apportionment awards, disputes resolution, penalties and exemptions.

Although quite old, this act laid out the legal basis for any property affected by a project and for compensating the effected owners of the land.

3.12 Factories Act, 1934

The clauses relevant to the project are those that concern the health, safety, and welfare of workers, disposal of solid waste and effluent and damage to private and public property. The Factories Act also provides regulations for handling and disposal of toxic and hazardous materials. Given that construction activity is classified as ‘industry’, these regulations will be applicable to the project contractors.

3.13 Labor Laws

Construction and operational activities during the course of construction may affect occupational health of workers. Employers are required to abide by labor laws in respect of their own employees and also to ensure that contractors to follow the relevant labor laws and rules relating to safety of the workforce and creating a healthy working environment. The proponents shall ensure that the labor force engaged at the project site is not exposed to any danger by monitoring the contractor’s work frequently.

Chapter 4: Description of the Environment

CHAPTER 4: DESCRIPTION OF THE ENVIRONMENT

4.1 GENERAL

This section covenants with the environmental conditions of the project area. Information that has been collected from different sources, including public literature, reports of other studies conducted in this area. This chapter of Environmental Impact Assessment (EIA) also touches upon other important aspects of local environment such as biological resources, socioeconomic development and quality of life values.

4.2 PHYSICAL ENVIRONMENT

The study examines the physical resources such as topography, soil, climate, surface and ground water and geology of not only the project site but also the city as whole to assess whether the project under assessment can or does have any impacts on any of these parameters. The description of physical environment of Faisalabad city and the project site is present in the following sub sections.

4.2.1 GEOLOGICAL FORMATION

Faisalabad stands in the rolling flat plains of northeast Punjab, between longitude 73.0790° East, latitude 31.4180° North, with an elevation of 184 meters (604 ft) above sea level. The city proper covers an area of approximately 1,230 square kilometers (470 sq mi), while the district covers more than 16,000 square kilometers (6,200 sq mi). The soil of Faisalabad comprises alluvial deposits mixed with loess having calcareous characteristics, making it very fertile.

4.2.2 TEMPERATURE

Due to its high evaporation, Faisalabad features a hot desert climate in Köppen-Geiger classification. The climate of the district can see extremes, with a summer maximum temperature 50 °C (122 °F) and a winter temperature of −2 °C (28 °F). The mean maximum and minimum temperature in summer are 39 °C (102 °F) and 27 °C (81 °F) respectively. In winter it peaks at around 17 °C (63 °F) and 6 °C (43 °F) respectively. The summer season starts from April and continues until October. May, June and July are the hottest months. The winter season starts from November and continues until March. December, January and February are the coldest months. The average yearly rainfall lies only at about 300 mm (12 in) and is highly seasonal with approximately half of the yearly rainfall in the two months July and August.

Given below are the maximum and minimum temperatures of Faisalabad throughout the figure.

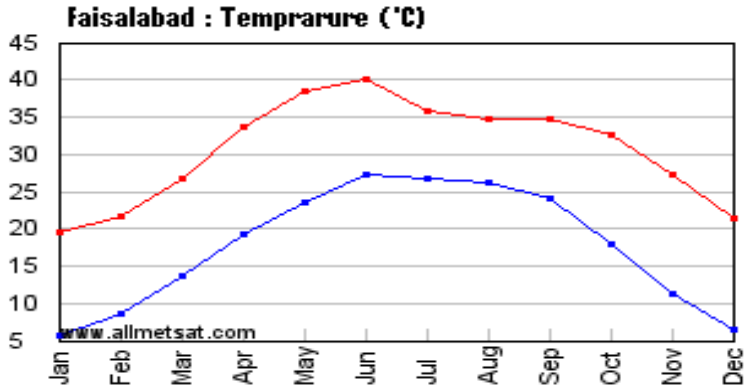


Fig 4.1: Average Annual Temperatures in Faisalabad

4.2.3 RAINFALL

The average yearly rainfall lies only at about 300 mm (12 in) and is highly seasonal with approximately half of the yearly rainfall in the two months July and August.

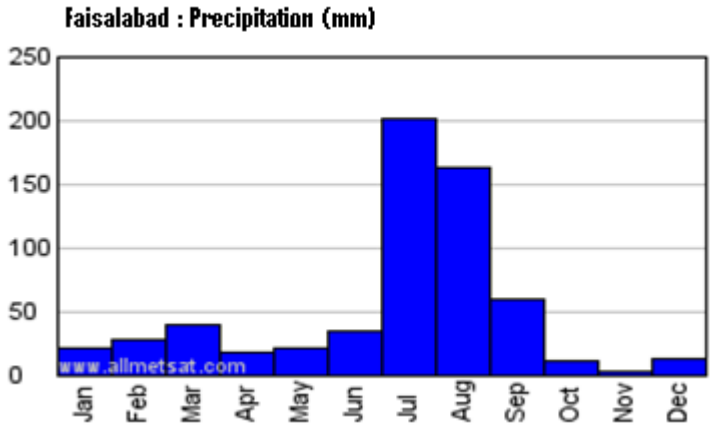


Fig 4.2: Average Yearly Precipitation in Faisalabad

4.2.4 TOPOGRAPHY

Faisalabad is the 3rd largest one of the most important city in Pakistan and is situated along the banks of river Chenab. The city of Faisalabad is bound by Chiniot District in the West and by Sahiwal on the East, while on South it is surrounded by Jhang District. On the northern side Sheikhupura and Lahore is present. The city occupies around 404 square kilometers of land and is still expanding. The proposed project

site is located in a plain area surrounded by the commercial-cum-industrial activities. Commercial establishments are the main topographic features.

4.2.5 WIND DIRECTION

The Faisalabad region experiences westerly and north westerly winds during the winter and spring seasons, known usually as the dry stable times of year and southerly and south easterly winds during summer and monsoons. Wind speeds are low during winter picking up during spring season and peaking during the summer months**.**

4.2.6 NOISE LEVEL

Faisalabad is an industrial area of the Pakistan having population around seven million. There are many a large, medium and small industries which are still working within city premises. Industrial activity and vehicular emissions are causing excessive noise in the city.

The affluent areas of Faisalabad are quieter than rest of the city. The noise level in these areas is still far higher than the standards set by the World Health Organization and the Pak-EPA. Noise is described as an unwanted sound emitted from un-avoidable sources of anthropogenic activities. Daily based natural induced sources of noise are rare to none but human induced noise sources are plenty and un-avoidable. Physically there is no distinction between sound and noise. Sound is a sensory perception and the complex pattern of sound waves is labeled noise, music, speech, low altitude aero plane flying etc. Environmental noise is a common cause of hearing loss due to industrial activities. Noise pollution in the city is on the rise with most residents complaining that the noise is becoming a public nuisance.

Sr. No.	Location	Noise Level dB(A)	Temperature °C	Wind Speed m/s
1. 1	Entrance of Project Site	61.2	32.6	0.0
2. 2.2	Outside of Project Site	54.3	35.2	0.2
3. 3.	Parking Area	56.0	38.0	0.0
4. 4.	Project Site	57.0	34.5	0.3
5. 5.	Main Gate of Mills	62.4	34.5	0.1

4.3 Readings of Measuring Parameters

4.2.7 AMBIENT AIR QUALITY

Atmospheric pollution particularly in urban area has a strong impact upon daily life. Faisalabad is the third largest city of Pakistan. Its economic growth, industrial progression& transport have increased which ground for rising energy consumption and ultimately consequences are increase in air pollution. The main sources of air pollution exhaust from motor vehicles and industries are SO_2, NO_2, CO, etc. Particulate Matter (PM) and noise which is inspected as the pollution indicators.

Dust particles along with oxides of nitrogen, sulphur and carbon are the major causes of air pollution in the ambient air quality. It was observed during the visit that Petrol and Diesel operated vehicles are emitting smoke and exhaust gasses in excessive quantity which are the leading sources of environmental pollution and responsible for the air quality worsening. In fact, exhaust emissions (including dangerous gases such as carbon monoxide, oxides of nitrogen, hydrocarbons and particulates) and Evaporative emissions (including vapors of fuel which is released into the atmosphere, without being burnt) are the prime sources for deterioration of air quality. The following figure is presenting the measuring parameters of the ambient air took from inside and outside of the project area for assessment of air quality.

Parameters	Units	Duration	Inside Project Area (Avg)	Outside Project Area (Avg)	NEQs Limits
Carbon monoxide (CO)	mg/m3	24 Hours	1.81	4.8	5.0
Nitrogen Dioxide (NO2)	mg/m3	24 Hours	BDL	BDL	120
Sulphur Dioxide (SO2)	mg/m3	24 Hours	BDL	BDL	120
Suspended Particulate Matters (SPM)	mg/m3	24 Hours	111.97	128.71	150

****BDL = Below Determined Level**

Fig. 4.4 Measuring Readings of Atmospheric Gases Inside and Outside of Project Area

4.2.8 WATER RESOURCES

- **Surface Water**

  There are no surface water resources like ponds or wetlands near the project area.

- **Ground Water**

The city of Faisalabad is underlain by the deep permeable aquifer formed within the alluvial plane of the Ravi River and Chenab, which is the part of Greater Indus Plain. Ground water is the principal source of municipal water supply in Faisalabad. This is also the case in the immediate vicinity of the site. The City's drinking water is obtained from groundwater aquifer by means of tube wells located throughout the area. Groundwater is pumped from 400-800 feet and is generally good for direct consumption. About 83% of the city's population is consuming groundwater for drinking purposes. . The project area lies in the district of Faisalabad, the groundwater table normally exists 40 to 50 ft below the ground level and contains high level of salinity, and in order to assess the quality of ground water chemical parameters were analyzed for the determination of quality of ground water and concentration of components. For determination of parameters chemically, Method (APHA) has used. The water quality in the project

area is quietly meet to standards of NEQs. Following table is demonstrating the results of drinking water quality of project site.

S. No.	Parameters	NEQS	Inside the Project Site Mg/l	Near Village Mg/l
1	pH	6.5-8.5	7.58	7.76
2	Total Dissolved Solids (TDS)	<1000	3200.0	0.002
3	Sulfate (SO4)	-	4500	974.46
4	Sodium (Na)	-	1678.5	1736.5
5	Potassium (K)	-	74.91	22.52
6	Iron (Fe)	-	0.227	0.002
7	Alkalinity	-	630.0	725.0

4.5. Results of Measuring Parameters of Ground Water

4.2.8.1 DRINKING WATER QUALITY

WASA (Water and Sanitation Agency Faisalabad) is providing drinking water to the residents of Faisalabad. WASA claims the quality of water conform to the Drinking Water Standards.

The increase in population will have direct impact on the water sector for meeting the domestic, industrial and agricultural needs. Pakistan has now essentially exhausted its available water resources and is on the verge of becoming a water deficit country. The quality of water supplies in many cities of Pakistan is waning fast. Over pumping of groundwater due to extended drought is however affecting the water quality adversely.

4.3 BIOLOGICAL ENVIRONMENT

Faisalabad is enriched with the presence of natural flora and fauna, although with the growing population and development activities, the presence of the same has been somewhat affected.

There are no significant or well-shaped trees and shrubs on the project site. There are some trees only along the main roads.

4.3.1 FLORA

Trees, also called the 'lungs' of the earth, are important for the restoration of the ecosystem. People can benefit incalculably from their survival and existence. Trees have also been a source of medicine for thousands of years and a refuge for various species of birds. No threatened or endangered species and no medicinal plants are present in the project area.

4.3.2 FAUNA

With an increase in the rate of urbanization, the ecology of Faisalabad has been considerably affected but there is no threatened or endangered species found in the project site. Similarly no wildlife is present.

4.4 SOCIOECONOMIC ENVIRONMENT

Socioeconomic environment is represented by the human and economic development and quality of life values. For the study of socio-economic environment of the project area, field surveys were conducted and interviews were held with the general public and neighbors.

4.4.1 DEMOGRAPHIC PROFILE OF FAISALABAD

The Demographic Studies are the major source of any city's Socio-Economic profile. Demographic Studies relate to population. Population studies are extremely important from Town Planning point of view. Until and unless we know about population in detail we cannot do successful planning. All aspects of population, such as sex-age composition, trend of migration, social, cultural, political, economic and administrative have to be related to planning considerations and decisions. Individuals are the raw material of society, therefore, society is directly affected by size, growth, composition and distribution of it population.

However, the people in Faisalabad also use other languages like English, Punjabi and Pashto. It is remarkable that Pakistan is an Islamic country, where the majority of the population is Muslim. Faisalabad, being a city in Pakistan, could not be an exception to

this. As a result, 96% of the total population in Faisalabad is Muslim. Other religions in the city accounting for the rest 4% are Christianity, Hinduism and Sikhism. The term population refers to the number of individuals living within a geographical area at a given time. According the census of December 2013, the total Population near the project area is approx. 24148 included different villages and their details as follows:

List of Population in Near Village

Sr. #	Village Name/No.	Population (Approx.)
1	Chak No.189 (Rasool Pur)	7638.0
2	Chak No. 188 (Nallaywala)	12488.0
3	Chak No. 188 (Lakarwala)	4022.0

4.4.2 HEALTH FACILITIES

Hospitals exist in the project area. There is government hospital or Basic Health Unit (BHU) available at district Faislabad. People also access to private hospitals in city and sometimes to nearby private dispensaries. Fever, malaria and chest congestion, Hepatitis-C were reported as the common diseases of the project area. In the project area, health conditions are much developed. One BHU in Chak No. 189 (Rasool Pur) is serving for general health. One male doctor with other staff covers the population. Health care services are provided to the citizens by both Public and Private sector Hospitals .The Government run hospitals are Allied Hospital, DHQ Hospital, PINUM Cancer Hospital, Faisalabad Institute of Cardiology (FIC) and General Hospital Samanabad. The Private sector also operates Hospitals, Clinics and Laboratories notably Sahil Hospital, National Hospital, Faisal Hospital & Al-Rahmat Laboratories. There is no health care facility in close near vicinity of the project area.

4.4.3 EDUCATIONAL FACILITIES

Faisalabad is one of the most literate cities of Pakistan, with more colleges and universities than many other cities in the country. Faisalabad is one of the Pakistan's largest producers of professionals in the fields of science, technology, IT, engineering,

medicine, nuclear sciences, pharmacology, telecommunication, biotechnology and microelectronics. The population of Faisalabad has a literacy rate of approximately 60%, with a split of 60% for males and 56% for females.

4.4.4 TRANSPORTATION AND COMMUNICATION

The project area is rich in the means of transportation. Main and side roads are metallic so transportation is properly available inside the residential colonies. Chinchi (four seated vehicle supported by bike), Rikshaw, bikes and some buses are the means of transport for the residents of the area. Faisalabad is one of the most accessible cities of Pakistan and that city of Pakistan where you can find Public and private Transport, 24 hrs a day and 7 days in a week. Public transport is always available in the project area. To fulfill the remaining needs of transport there are thousands of rickshaws and taxis which run on compressed natural gas to reduce pollution in the city and of course about 75 percent of the residents have their own conveyances.

4.4.5 SITES OF HISTORICAL SIGNIFICANCE

Faisalabad is known as the creation of British Raj. The city was established in 1901 and named as Lyallpur. Faisalabad is very famous because of textile industry and commonly known as Manchester of Asia. Famous sites of archeological significance in Faisalabad are as under:

- CLOCK TOWER (Ghanta Ghar)
- Agriculture University
- Bagh-e-Jinnah
- Government College University (GCU)
- Haveli Dera

4.5 QUALITY OF LIFE VALUES

No residential area is present near the project site; therefore, individuals and workers from neighboring areas were interviewed. The individual assessed from the neighboring communities of the project area were involved in small businesses and private jobs in nearby industries. Most of the people hesitated telling their incomes; however, incomes average in the range of 20000 to as much as 100000 PKR; enough to meet their basic needs. They avail all the basic facilities of healthy living and enjoy human rights and civic liberties.

The diseases prevalent in the community were stomach disorders, fatigue, joint pain, diabetes and arthritis. But it was also observed that all these disease are commonly due to improper diet and water contamination.

4.6 LAB REPORTS

The baseline validated reports of certified laboratory regarding ambient air, water and noise is attached herewith.

Chapter 5: Stakeholder Consultation

CHAPTER V:
STAKEHOLDERS CONSULTATION

5.1 General

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

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

5.2 Objectives of Consultation

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

The important general objectives of the consultation process are:

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

5.3 Methodology

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

- Selection of the stakeholders for consultation, reconnaissance of the project site and initial discussions with the neighboring villagers, drivers etc.
- Appraising the targeted stakeholders initially for the purpose of consultation and working out a schedule for holding regular consultation meetings
- Distribution of questionnaires to obtain opinions and concerns
- Meetings with the stakeholders through the participation of environmental consultants and social specialists and documenting the opinions of the stakeholders expressed during the meetings etc.

5.4 Categories of Stakeholders Consulted

The stakeholders contacted during the survey belonged to different categories of people as shown in the Table 5.1.

Table 5.1: Categories of Stakeholders Interviewed in the Project Area

Sr. No.	Stakeholder Category
1	Neighbor workers
2	Project workers
3	Potential Distributors

5.5 Issues Discussed

Following issues were discussed during the stakeholder consultation:

- Overall activities of the project operational phase
- Possible impacts on natural vegetation, land and properties
- Possible mitigation measures
- Benefits or implications of the project specifically for the local people

5.6 Findings of the Overall Discussion

- After making complete feasibility the site is being used for industrial activities.

- The project helps to provide a safe and environment friendly area for manufacturing of fine paper. It enhance the socioeconomic conditions/values of the area
- Project increases revenue generation for the Government
- It create employment opportunities
- Local people should be given preference for employment in the project

Since the project is planned to be established in an industrial estate. Majority of people favored the project in a sense that the project overcomes the increasing needs of paper in market.

5.7 Socioeconomic Trends around the M/S Jhang Fabrics (Pvt.) Limited

Socioeconomic status (SES) is an economic and sociological combined total measure of a person's work and of an individual's or family's economic and social position in relation to others, based on income, education, and occupation.

This chapter includes the information that how the present study has been conducted and what are the results of this socioeconomic survey in the surrounding areas of M/S Jhang Fabrics (Pvt.) Limited, Sheikhupura.

5.7.1 Study Population

The target population was comprised of nearby industries workers around the project site of M/S Jhang Fabrics (Pvt.) Limited, Sheikhupura.

5.7.2 Study Size

Therefore, approximately a total of 20 households of different socio-economic conditions were surveyed and their heads of households were our main respondents.

5.7.3 Study Instrument

Data collection tool was questionnaire; it was a 19- items based semi structured questionnaire.

5.8 Sampling Procedure for Questionnaire

5.8.1 Procedure

Before filling the questionnaire respondents were fully assured that their data will not be disclosed. They were told about the purpose of study. They were also told if they have any problem to understand the questions in questionnaire can ask**.**

5.8.2 Statistics Measures

After preparing the questionnaire, field surveys were conducted at 23-07-2019. The data selected from questionnaire was analyzed by using SPSS version 16. The data collected with the help of questionnaire was analyzed in SPSS to get the descriptions of current study. A part of questionnaire has been adopted from SF-36, a standard question to evaluate physic-social-health status.

5.8.3 Study Areas

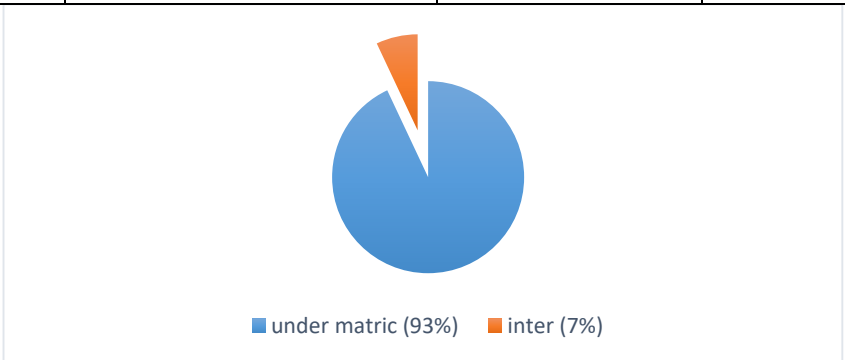
Somehow at surrounding and nearer industries at Small Industrial Estate was visited for socio-economic aspects. Details of these sites are discussed below. These areas were surveyed by team of M & Y Environmental Consultants (Pvt.) Limited as per requirement of socioeconomic survey for Environmental Impact Assessment Report of M/S Jhang Fabrics (Pvt.) Limited.

5.8.4 Description of Tables:

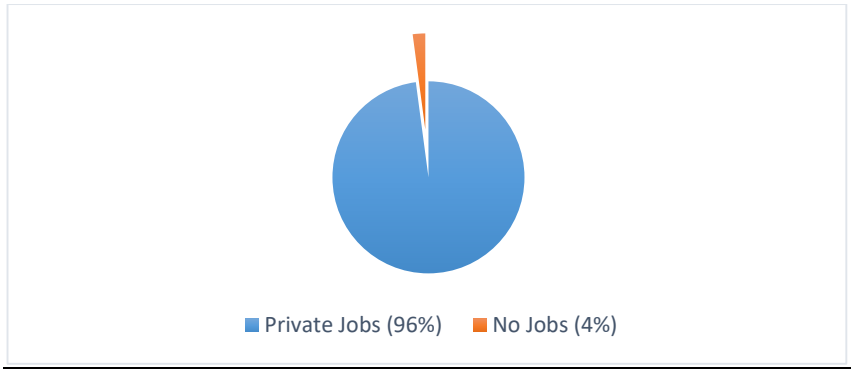
In the following table, only frequency and percentage has been measured (by SPSS) of those parameters which are probably present in maximum quantity.

Table 5.1 Socioeconomic Questionnaire

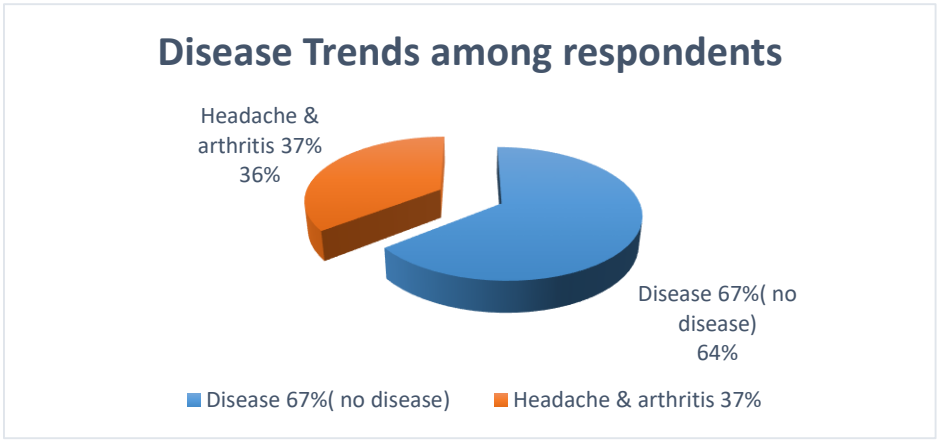
Sr. #	Variables	Frequency	Percent (%)
1	Name & Address	-	-
2	Date	-	-
3	Address & CNIC	-	-
4	Age	89 (above 30 years)	89%
5	Education	93 (under matric)	92.4
6	Occupation	96 (Private jobs)	95.1
7	Marital Status	99 (married)	99
8	If married then no. of children	87 (> 4)	86.2
9	Total Family members	90 (< 5)	90
10	Religion	97 (Islam)	96.2
11	No. of earning members in family	88 (< 3)	88
12	Total income	97 (> 25 PKR)	96.2
13	Source of income	99 (Private jobs)	99
14	Experience of Diseases	67 (no disease)	67
15	If Yes, then nature of disease	37	



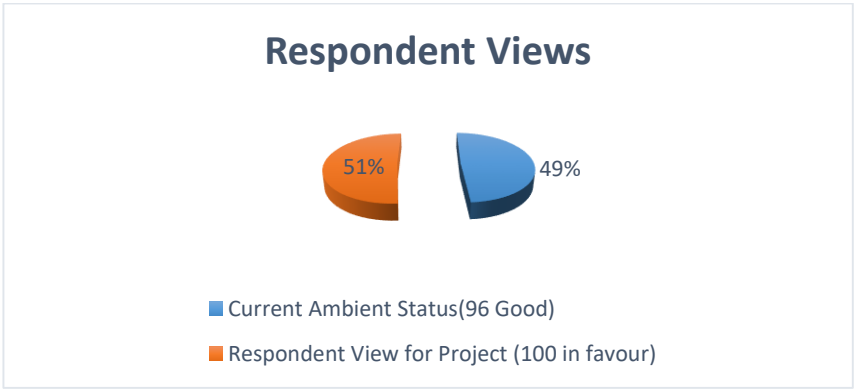
5.1 Graphical Presentation of Education around the Project Site



5.2 Trends of jobs around the project site



5.3 Health Status of Respondents



5.4 Respondent View about Project

5.9 Stakeholder Concerns and Recommendations

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

5.9.1 Project Approval

The community consultations demonstrated that goodwill towards the project proponent indeed exists. Approval for project activities by communities was evident. The consultations were considered a good gesture and were appreciated; especially by men and women. The poverty level is such that communities are looking forward to any project proponent to improve their financial well-being to a great extent. Benefit from the project should be distributed judiciously and equitably among the primary stakeholders in the project area, and the proponent will continue to ensure that this principle is followed in this project and community development program.

5.9.2 Local Employment

Communities in the project area emphasized that local inhabitants should be given priority when employing people for related works and activities according to their skills.

5.9.3 Compensation

Compensation shall be paid for any damage if it is there. The compensation process should be transparent.

5.10 Proponent's Environment Management Team

Discussed in detail at Chapter 7-page No. 84 onward.

5.11 The responsible authority

The Jhang Fabrics (Pvt.) Limited is incorporated company under Companies laws, therefore under Section 18 of Punjab Environmental Protection Act, 1997 the responsible authority is proponent.

5.12 Other departments and agencies

The proposed project has been discussed in length with the concerned department. The proponent and consultant discussed the proposed project with the officials of Punjab Irrigation Department and after positive discussion the Punjab Irrigation Department appreciated the proposed project and given Drain effluent approval to the proponent. The main concern which

pointed out by the Punjab Irrigation Department is regarding disposal of waste water after proper treatment process. The proposed project has also been discussed with other concerned department and no department has given any negative remarks regarding the project.

5.13 Environmental practitioners and experts

The proposed project has been discussed with environmental practitioners and experts i.e. Raja Khalid Advocate High Court, Rae Hussain Shahzad Khan Advocate High Court, Dr. Saeed Ahmed Barvi, Abdullah MSC Environmental Science, Zohaib Hassan BSC Environmental Science, etc. All the environmental practitioners and experts has given positive remarks regarding the proposed project. All the environmental practitioner and experts has shown great concern regarding control of Air pollution emitted from the boiler and especially waste water during operational activity of the proposed project.

5.14 Affected and wider community

M & Y Environmental Consultants visited the project site and got opinion of people residing near the proposed site. M & Y EC asked different questions relating to the proposed project with the help of questionnaire which is attached with this EIA Report.

Chapter 6: Potential Environmental Impacts and Mitigation Measures

CHAPTER 6: POTENTIAL ENVIRONMENTAL IMPACTS AND MITIGATION MEASURES

6.1 GENERAL

This chapter discourses the potential environmental and social impacts of the project activities, predicts the magnitude of the impact, assess significance, identifies the mitigation measures to minimize the adverse environmental impacts and evaluates the residual impact of the project. Environmental impacts of a project is driven out using numerous factors and parameters, due to this reason there is necessary to evolve Environmental Management Plan to develop the mitigation measures. The assessment via these parameters is necessary in the study area for comparative analysis with that area where there is no activity has been introduced.

6.2 IMPACT ASSESMENT METHODOLGY

Once potential impacts are identified, the assessment of these potential impacts will follow these steps:

- Definition of criteria for determining the significance

The consequences of the project activity are evaluated by comparing it against recognized significance criteria. The criteria are of following type:

- Institutional recognition- law, standards, government policies and plans
- Technical recognition- guidelines, scientific or technical knowledge.
- Public recognition- social and cultural values and opinion of a segment of the public, especially the community directly affected by the project.
- Professional interpretation of evaluator.
- Prediction of magnitude of the potential impacts

This step refers to the description, quantitatively (where possible) or qualitatively, of the anticipated impacts of the project

- **Identification of mitigation measures**

  It is determined that the predicted impact is significant when compared with the criteria for determining the significance, suitable mitigations measures are identified. These measures can be classified into following categories:

  - Avoiding the impacts altogether by not taking certain project activity or part of an activity. For example, using CFC free equipment to avoid the impacts on the ozone layer.

- Minimizing impacts by limiting the degree or magnitude of the activities. For example, minimizing dust emission by reducing the vehicular traffic.
- Rectifying the impacts by repairing, rehabilitating, or restoring the affected environment.
- Compensating for the impacts by replacing or providing the substitute resources or environment.

➢ **Evaluation of the residual impacts**

Incorporation of suggested mitigation measures reduce the environmental impacts of the project and bring it within the acceptable limits. This step refers to the identification of the anticipated remaining impacts after mitigation measures have been applied.

➢ **Identification of monitoring requirements**

The last step in the assessment process is the identification of minimum monitoring requirements. The scope and frequency of monitoring depends on the residual impacts. The purpose of the monitoring is to confirm that the impact is within the prescribed limits and to provide timely information if unacceptable impact is taking place.

6.3 IMPACTS ASSOCIATE WITH THECONSTRUCTION PHASE

As project area is far from the community and biological life, so, there are rare impacts on the environmental and socioeconomic conditions. Moreover, possible impacts associated with the construction activities of the project are discussed in this section. The impacts that are discussed are following:

➢ **Environmental Impact**

- Construction Noise
- Dust Emission during Construction
- Vegetation Loss
- Water Resources
- Soil Contamination

➢ **Socio-economic Impact**

- Community Safety
- Employment Conflicts

6.3.1 CONSTRUCTION NOISE

Depending upon the equipment used and its distance from the receptor, the community may typically be exposed to intermittent and variable noise level. During the day such noise results in general annoyance and can interfere with the sleeping during night. But in case of the instant plant there is no residential activity within 1 km around the project area.

Potential Issues

The potential noise related issues during the construction may cause disturbance to the surrounding communities of the project due to construction machinery operation on the project site but as such there is no community residing around the project area so, the impacts regarding noise will be on minimal / negligible level.

Impact Analysis

The potential sources of significance noise during the construction period include the construction machinery and construction related traffic. Precise prediction of noise due to construction activities at given location at given time requires the list of all equipment that is operational at the time and the following information regarding each piece of equipment:

- The maximum and minimum noise level, measured at reference distance from the equipment, during a work cycle
- Fraction of time it operates at maximum level during a work cycle
- The usage factor, i.e. the number of hours during the day when the equipment is operational
- Distance of equipment from the receptor
- Potential noise barrier and other topographical features that attenuate the sound
- Atmospheric condition, the wind speed and direction, humidity and barometric pressure, also affect the propagation of sound. However for short distances the effect of these is insufficient compared to other variables.

Mitigation

The strategy to minimize the noise in the community within acceptable limits should be based on the followings:

- Reduce equipment noise at source
- Minimize vehicular noise
- Make sure the movement of transportation vehicles should be confined only in the day. The movement of vehicle should be restricted during night time.

- It will conform that construction equipment and vehicles should equipped with mufflers to effectively decrease generation of noise

The proposed strategy should be implemented through the following specific measure:

- **Reduce Equipment Noise at source**

Based on the above survey, equipment emitting excessive noise in comparison other similar equipments should not be allowed to operate. Equipment underuse should be regularly maintained, tuned and provided with mufflers to minimize noise level. Equipment in poor state of maintenance, particularly without nose control should be checked to determine if it can be improved, replace with less noisy equipment as soon as practicable.

- **Traffic noise**
  - The construction related traffic would enter into the plant site through construction gate
  - Blowing of horns will be prohibited on the access road to the plant site and inside the site.
  - Drivers will follow traffic regulations, protocol and road courtesies
  - It will be ensured that all such vehicles are properly tunes and in good working conditions and have quality mufflers installed in order to reduce vehicular noise

Residual Impacts

No irreversible noise impact is expected from the construction activities at the plant site. It is possible that occasionally there will be accidences of the significance criteria during the construction. This may happen if for example the numbers of construction machineries are deployed close to community. This will cause a nuisance to the community, although it is likely to last for short period.

Monitoring Requirements

Although the supposed project of Jhang Fabrics (Pvt.) Limited is away from the residential area but the issue related to the noise will not be taken for granted, to mitigate the impacts that can arise due noise a complete monitoring plan will be developed. Monitoring will be carried out regularly.

6.3.2 DUST EMISSION DURING CONSTRUCTION

Dust emission from construction sites is a concern particularly for the settlement that is found near the construction site. Dust generated during the construction activities can be substantial. Dust or the equivalent technical term particulate matter is generally defined as any airborne finely divided solid and liquid material up to the size of about 100 microns. Large particles also tend to settle rapidly and often do not reach to the receptor. In case where they reach the receptor, the dust is considered as nuisance as it may disturb soil property and affect the visibility.

Potential Issues

Particulate matter emitted during construction activities can result in deterioration of ambient air quality in the vicinity, and be the nuisance for the community and workers.

Impact Analysis

Potential sources of particulate matter emission during construction activities include earthwork, exposed surfaces, exposed storage piles, truck dumping, halting vehicle movement on unpaved road, combination of liquid fuel in equipment and vehicles, land excavation and concrete mixing and batching.

The quality of dust that will be generated on the particular day will depend on the magnitude and nature of activity and the atmospheric conditions prevailing on the day. A wide variety of options exist to control emission from the construction site. The most effective means of reducing the dust emission is wet suppression. Water exposed surface and the soil with adequate frequency to keep soil moist at all time can reduce the total dust emission from the project by as much as 75 %.

Mitigation

The following mitigation measures will be implemented at the proposed unit construction site during construction to control the emission of particulate matter:

- Water will be sprinkled daily or when there is obvious dust problem on all exposed surfaces to suppress emission of dust. Frequency of sprinkling will be kept such that the dust remains under control, particularly when wind is blowing towards the community.
- Dust emission from soil piles and aggregate storage stockpiles will be reduced by covering the piles, for example with tarpaulin or thick plastic sheet, to prevent emission.
- All roads within the project site that are to be paved or appropriately sealed will be paved as early as possible before commencement of construction work.

- Project traffic will maintain at the maximum speed limit of 20km/h on all unsealed roads.
- Construction material that is susceptible to dust formation will be transported only in securely covered trucks to prevent dust emission.

Residual Impacts

The dust emission during the construction activities will affect the ambient air quality. Dust is likely to be nuisance to the community. The effects of the dust trouble with no lasting impact expected after the completion of construction.

Monitoring Requirement

In the view of the residual impacts, the following monitoring measures will be undertaken:

- Dust emission from the construction activities will be visually monitored, particularly when the activity is undertaken close to community, to prevent visible dust
- The community in the residential area will be actively consulted. Their feedback will form a key mean for monitoring the impacts of dust emissions.

6.3.3 VEGETATION LOSS

The project area is an industrial area owned by the proponent. As such there's not any natural vegetation on the project site. But the proponent has planned a tree plantation plan to make the unit environment friendly.

6.3.4 WATER RESOURCES

Potential Issues

The extraction of water for the construction activities can affect the groundwater availability for the project area communities.

Impact Analysis

Common aquifer yield in the area is quite good. The extraction of water during construction period will not affect the availability of the underground water for community.

Mitigation

Based on discussion above, the following measures are proposed:

- Project management will bore deep groundwater well designated for its requirements
- Efforts will be made to ensure that water is conserved and that environment friendly techniques will be adopted too.

Residual Impacts

No residual impact will envisage due to extraction of water and sufficient recharging of the aquifer in the project area.

6.3.5 SOIL CONTAMINATION

Spills during refueling, discharges during vehicle and equipment maintenance, traffic accidents and leakage from the equipment, and vehicles often results in the contamination of the soil at the construction site.

Impact Analysis

During the construction of the project spills of fuels, lubricants and chemicals can take place:

- During transfer from one container to another
- During maintenance of equipment and vehicles
- Due to leakage from the containers and equipment
- As a result of traffic accidents

Depending on nature of material, location of spill and quantity of spill, soil can get contaminated.

Mitigation

The following controlled measures are proposed to mitigate the impact on the soil resources:

- Spills prevention trays should be provided and used at refueling locations
- During on the site maintenance of vehicles and equipment, tarpaulin or other impermeable material should be spread on the ground to prevent the contamination of the soil.
- Regular inspection should be carried out to detect the leakage in construction vehicles and equipment
- Fuels, lubricants and chemicals should be stored in covered banded areas
- Appropriate arrangement, including shovels, plastic bags and absorbent material, should be available near the fuel or oil storage area
- Contaminated soil should be collected and dispose off safely

Residual Impacts

Implementation of proposed mitigation measure is not likely to leave any long term residual impacts on the soil.

Monitoring Requirement

To ensure compliance:

- Regular inspection of soil of the project area should be undertaken
- Incident record of all moderate and major spills should be maintained
- socioeconomic impacts associated with construction activities

6.3.6 COMMUNITYSAFETY

Potential Impacts

The construction activity can potentially be a safety hazard for the community. In particularly increase in the construction related traffic on the project access road.

Impact Analysis

Project related traffic particularly on the section of the access road that is adjacent to the existing plant will be major source of concern for the community. The construction activities near the residential areas will create several potential safety hazards.

Mitigation

The followings are the mitigation measures:

- A public safety plan should be developed
- Community complains register and other mean should be adopted for the community to complaint.
- The fence surrounding the site should be put in on during the construction to prevent access to construction site.
- All entry points into the construction area should be staffed 24 hour a day. People who are not related to the project should not be allowed inside.
- No machinery should be left unattended, particularly in the running condition.
- Road signage relevant to the project should be posted, where necessary.
- Nighttime driving of project vehicle should be limited.

Residual Impacts

With the implementation of mitigation measures proposed above, the residual impact on the community safety due to construction will be insignificant.

Monitoring Requirement

As the project is well away from the community interruption but still to avoid such kind problem from community a Specific monitoring requirement should be part of community safety plan and may include inspection for road signage, safety makers, fencing and observation of other measures.

6.3.7 EMPLOYMENT CONFLICTS

Potential Issues

Potential employment related issues include dissatisfaction among the local communities over the number of jobs offered to them.

Impact Analysis

The project is likely to create the significant job opportunity. Even unskilled and semi-skilled employment opportunities are likely to be created will be for a significant period.

The key issue related to provision of job. This issue particularly become problematic if it is perceived by the local community that a significant number of construction related job opportunity are not given to people from the local community. This could be result in friction between local residents and construction worker.

Mitigation

The following mitigation measures will be implemented:

- Maximum number of unskilled and semiskilled jobs should be provided to the local communities
- A local labor selection criterion should be developed in the consultation with the community.

Residual Impacts

Due to its economic implementation, it is possible that employment may remain a contentious issue throughout the project.

Monitoring Requirements

The following data should be recorded and maintained on the employment:

- Total number of Unskilled and semi- skilled, and skilled job offered during construction.
- Name and place of residence of the employed staff.

6.4 ENVIERONMRENTAL IMPACTSAS ASSOCIATED WITH OPERATIONAL ACTIVITIES

The environmental and socio-economic impacts related with the operation phase of the project are discussed in this section. The impacts that are discussed are the followings:

- Noise
- Wastewater

- Air pollution
- Hazardous Material
- Waste Management
- Socio economic impacts
- Emergency response

6.4.1 NOISE

Potential Issues

The noise may affect the community.

Impact Analysis

Noise if emitted during the project operation can potentially be a nuisance for the nearby community. In this project noise shall be emitted during Hard & Soft winding of yarn only which will be confined in the working area / room. This noise shall not emit outside the room as it will be made sound proof. This working area will also be provided with the dust collector to avoid all the visuals problem, and problem of dust as well.

Mitigation

- Controlling noise at its source is the best method of noise control. Therefore, put silencers on the machines.
- Workers should be told and encouraged to use PPE's (ear plugs or ear muffs).
- Proper muffling of operating equipment.
- Noise can be controlled with barriers by enclosing the source of the noise, by placing sound-reducing barriers between the worker and the source, or by increasing the distance between the worker and the source.

Residual Impacts

No significance increase in noise level in the community envisaged under normal operation.

Monitoring Requirements

During project operation, it should be ensured that the noise level at the project does not exceed the prescribed limits.

6.4.2 WASTEWATER

Potential Issues

The discharge effluent from the project can potentially affect the water resources if it is discharged into fresh water channel, canal, pond etc. But wastewater of this project shall be discharged after adequate treatment Waste Water Treatment plant (WWTP) into WASA sewage system; hence said wastewater shall cause no adverse impacts.

Impact Analysis

The project can generate acidic and alkali contaminants, aerosols, high COD and high BOD concentration as well as much more hard degradation materials.

Mitigation

- The liquid effluents from the project operation should be properly treated before disposal by employing adequate Waste Water Treatment Plant (WWTP).
- Discharges of solvents should not be allowed to enter in the main fresh waste stream.
- Efforts should be made to ensure that water is conserved and that environment-friendly techniques are adopted too.

Impacts Residual

No residual significant impact on the fresh groundwater resources of this area is expected. The wastewater of the unit shall be discharged into municipal sewer system after treatment in the WWTP; all the wastewater parameters shall conform to the NEQS limit.

Monitoring Requirements

Complete record of water withdrawal from the ground water and its uses for various purposes should be maintained. It is expected that water requirement during the operational phase of the project will be 10 gallons/day that is procured through ground. The administration will install the waste water treatment plant to avoid the water pollution that can be produce by the operation of this unit.

6.4.3 AIR POLLUTION

There will be no issue regarding the air pollution during operation phase of project. Nitrogen oxides, sulphur oxides and particulate matter can be released that can affect indoor and outdoor air quality. Emissions sources during production include equipment leaks, and storage vessels. Many different factors may influence the quality of air, in particular physical conditions (e.g. temperature, humidity, air circulation). Emission of gases and particulate matter from boiler will be controlled by applying scrubbing unit at boiler. To avoid the issue, there should be proper ventilation plan which will be developed keeping in mind the indoor and outdoor air quality.

Mitigation:

- Proper ventilation can limit the amount of indoor pollutants.
- Boiler will be provided with the scrubbing unit to eliminate the gaseous emissions.

- Water spraying should be practiced where required.
- Regular monitoring
- No waste should be burnt at the premises.

6.4.4 HAZARDOUS MATERIAL

Potential Issues

In the operation phase some dyes and chemicals may be stored which can affect the soil or groundwater if not properly handled.

Impact Analysis

The hazardous material can cause harm to human health or the environment if not handled correctly.

Mitigation

All hazardous materials management plan should be prepared that contain the following management and mitigation measures.

- Labels should be placed on the storage vessels.
- Supporting information should also available for the hazardous material.
- A hazardous material register should be in place that covers:
- Hazardous material name
- Storage requirement and precaution.
- Location and physical properties.
- Approved disposal method.

Residual impacts

No significant impact will be posing by the hazardous material if the mitigation measures are fulfilled.

Monitoring Requirements

There will be a separate place (go down) for the storage of the dyes and chemicals. All the activities regarding the storage and handling of chemicals will be managed by the skilled person to avoid any mishap of mishandling. Complete record of purchase, storage, use, and disposal of hazardous material should be maintained.

6.4.5SOLID WASTE MANAGEMENT

Potential issues

Waste minimization is very important part by focusing on the waste avoidance and reduction through use of cleaner production processes and practices. Pollution control and waste disposal cost can be lowered. Preference will be given to waste avoidance

and reduction instead of recycling and reuse. The unit administration will make a comprehensive plan to mitigate all the issues regarding the waste generation to till its disposal.

Mitigation

A useful approach to waste minimization involves the preparation of proper waste minimization plan. The starting point for the waste minimization will be waste audit. This includes:

- Identification of all liquid and solid waste streams.
- Quantify and characterized the waste stream.
- Recyclable material should be separated at source.
- No waste should be dumped at any location outside the boundary.
- All the hazardous material should be separated from the other waste.
- Separate dust bin should be placed within the premises
- Audit of waste management should be undertaken on regular basis
- Record of all waste generated should be maintained. Quantities of waste, dispose, recycled or reuse should be logged on
- All hazardous waste which cannot be recycled or reuse should be dispose off at the appropriate landfill site.
- Training should be provided to personnel for identification, segregation and management of waste.

Having done the waste audit, waste assessment will be carried out. This involves the investigation of production process and raw material purchase and assessment of all waste streams.

Residual Impact

Even after the implementation of the above measure, it is possible that some littering will take place. Monitoring and inspection should be under taken to minimize the residual impacts.

Monitoring Requirements

The monitoring measures will include:

- Record of all waste generated should be maintained.
- Quantities of waste, dispose, recycled or reuse should be logged on the waste tracking register.
- Audit of waste management should be undertaken on regular basis.

- The areas around the project boundary and access should be periodically inspected to verify that no project related waste is scattered in these areas.
- Recyclable waste will be sold to the contractor for recycling.
- The Sludge obtained from the treatment plant will be dispose off through a accredited contractor.

6.4.6 SAFETY HAZARDS, PUBLIC HEALTH AND NUISANCES

Operation of the project may cause some concerns for safety, public health and nuisances within the project area.

Mitigation:

- Personal Protection Equipments (PPEs) such as ear plugs, safety Helmets, Gloves, Goggles, Masks and Gums Shoes will be provided to the employees to ensure their safety at work place.
- Worker's awareness and safety wall chart showing safety symbol will be displayed.
- First Aid Box will be kept in every department which will be will within the approach in case of any injury or mishap.
- To avoid any chance of fire, a comprehensive fire fitting system will be developed that includes all types of fire Extinguishers, fire hydrants, sand Buckets and fire fitting Vehicles.
- Basic medical and safety training will be held from time to time to minimize the risk of health and safety issues in the industry premises.

6.4.7 SOCIO-ECONOMIC IMPACTS

The project is creating skilled and unskilled labor opportunities during operational stage. Most of the unskilled labor are employed from the local communities, which reduces the unemployment in the area and improve living conditions of the local population. This is a moderate positive impact.

6.4.8 EMERGENCY RESPONSE

Incidents and accidents may take place unexpectedly during project operations. These may include;

- Fire hazard

6.4.8.1 FIRE HAZARD

During operational phase of the project fire hazard poses a serious threat.

Mitigations:

- Fire extinguishers should be properly maintained and checked periodically.

- Adequate fire hydrant system should be installed.
- Prohibiting flammable materials in the premises.
- Maintaining fire alarm systems for detection and warning of fire.
- Pressure gauges should be checked monthly.
- Adequate training of workers on use of fire fighting system to deal with the situation.
- Administration of the unit will made the proper evacuation plans from boiler house, Stitching and processing unit hall.

Chapter 7: Environmental Management& Monitoring Plan

CHAPTER 7: ENVIRONMENTAL MANAGEMENT& MONITORING PLAN

7.1 GENERAL

This EIA provides the environmental management plan (EMP) of the project for its operational phase to keep it environment benign.

Outline and key features of the EMP for operations phase is presented. As per the environmental legislation in Pakistan, the EMP for the operations phase, along with other documents, is to be submitted to the environmental protection agency to obtain confirmation for compliance and environmental approval for project operation.

7.2 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 and staff.
- Means of effective communication of environmental issues between them.
- Identify monitoring parameters in order to ensure the effectiveness of the mitigation measures.
- Provide a mechanism for taking timely action in the face of unanticipated environmental situations.
- Identify training requirements at various levels.

7.3 MANAGEMENT APPROACH

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

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

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

7.4 ENVIRONMENT MANAGEMENT PLAN FOR CONSTRUCTION PHASE

It lists all the mitigation measures identified in the EIA and the associated environmental or social aspect.

Table 7.1: Environment Management Plan (EMP)

Environmental and social aspects	**Measures**	**Responsibility**
Construction and noise control plan	Periodic surveys will be conducted for the control of noise level from the construction equipments, operational machinery and vehicles. Noise control measures will be implemented	Administration
Dust emission control	Water will be sprinkled on all the exposed sites to suppress the emission of dust.	
Vehicle and equipment exhaust control	All vehicles and other equipment used during the construction will be tuned and maintained in good working condition in order to minimize the emission of pollutants.	
Water conservation plan	Groundwater being extracted for construction activities would be recorded, where possible, water would be recycled.	
Community safety plan	The said project is nowhere near the community but still fence surrounding the site will be put in on during the construction to prevent assesses. All entry points into the construction site will be staffed 24 hours a day. No machinery will be left unattended, particularly in the running condition. Night time driving of the project vehicle will be limited.	

Soil contamination	Spills trays will be provided and used at refueling locations. Emergency plan for the spill management will be prepared and inducted to the staff for any incident of spill. Fuel, lubricants and chemicals will be stored in the covered bounded area.	
Hazardous and non-hazardous waste management plan	Recyclable material will be separate at source. All hazardous waste will be separated from the other waste. Record of all waste generated during the construction phase will be recorded. An emergency response plan will be developed for the hazardous waste. All containers of hazardous waste should be properly labeled.	

7.4.1 ENVIRONMENTAL MONITORING PLAN

Environmental monitoring is a vital component of the environmental management plan. It is the mechanism through which the effectiveness of the environmental management Plan in protecting the environment is measured. The feedback provided by the environmental monitoring is instrumental in identifying any problems and planning corrective actions. The main objectives of the environmental monitoring during the construction phase of the expansion plan will be:

- To provide a mechanism to determine whether the project construction contractors are carrying out the project in conformity with the EMP.
- To identify areas where the impacts of the projects are exceeding the criteria of significance and, therefore, require corrective actions.
- To document the actual project impacts on physical, biological, and socioeconomic receptors, quantitatively where possible, in order to design better and more effective mitigation measures.

Following environmental record should be maintained:

- Periodic inspection reports of the site
- Audit reports
- Incident record of all moderate and major spills. The record will include:

- ✓ Location of spill
- ✓ Estimated quantity
- ✓ Spilled material
- ✓ Restoration measures
- ✓ Photographs

- Description of any damage to vegetation, water resource, or community asset.
- Corrective measures taken, if any
- Waste Tracking Register that will records of all waste generated during the construction period. This will include quantities of waste disposed, recycled, or reused.
- Records of water consumption with use wise breakdown
- Survey reports, in particular, the following:
  - ✓ Soil erosion: Baseline survey, including photographs, will be conducted to document pre-construction condition of the construction corridor.
  - ✓ Vehicle and equipment noise.
  - ✓ Ambient noise survey reports.
  - ✓ Vendor data—all vendors disturbed by the project and compensation paid Public infrastructure: Record of all damages and repair work undertaken.
  - ✓ Employment
  - ✓ Total number of unskilled, semi-skilled, and skilled jobs offered during Construction.
  - ✓ Name and domicile of the employed staff.
  - ✓ Archeological resources—Record of any finds with photographs.
  - ✓ Project and Community Interface
  - ✓ Record of community complains and the measures taken to address them.
  - ✓ Number of meeting held in various communities and persons who attended
  - ✓ Environmental and social training records

Table 7.2: Roles and Responsibilities for Environmental Monitoring

Aspects	Proponent Responsibilities	Contractors Responsibility	Relevant Documentation
Contracting	Ensure that the monitoring requirement are included in the contract between the proponent and the construction contractor	Understand the requirements and estimating the required resources	Contract between the proponent and the contractor
Monitoring plan	Finalize the monitoring plan prior to the commencement of the construction		Revised monitoring plan
Resources	Ensure the availability of resources for environmental monitoring	Ensure the availability of resources for environmental monitoring	Project budget
Environmental staff	Designate an environmental manager for the project.	Appoint officer dedicated to environment	Job description
Monitoring survey	Undertake the periodic inspection and carry out the field measurement.	Systematical observe and collect the data on the environmental performance	Inspection and survey reports
Environmental Audit	Conduct periodic audits in the construction site and commencing third party audit	Conduct audit	Audit report

Reporting	Ensure that periodic environmental monitoring reports are received		Periodic reports
Corrective action	Verify that activities are carried out complying with EIA/EMP	Carry out the corrective actions	Corrective action record
Maintenance of record	Maintain monitoring data and record of all incidents of environmental significance.	Maintain monitoring data and record of all incidents of environmental significance.	Environmental data base

Table 7.3: Environment Monitoring Plan

Potential activity and potential impact	**Objective of monitoring**	**Parameter to be monitored**	**Measurements**	**Location**	**Frequency**	**Responsib**
Disturbance due to noise from construction activity	To determine the effectiveness of the noise abatement measure on the sound pressure level	Noise level near the receptor	Reading will be taken.	At least three location on the plant boundary and three location at the receptor level	On three typical working day and one weekend	Environme officer Manager
Soil erosion due to wind	To determine the	Inspections for sign and	Visual inspection	Dust	Only weekly	

from expose surface	effectiveness of the erosion control measure	erosion during and after the construction			basis	
Soil contaminati on due to leakage of oil and chemicals on the ground	To determine the effectiveness of the control measures taken to minimize the spillage of oil and chemicals.	Procedure in place to handle the liquids and availability of procedure and equipment for emergency response	Visuals inspections and availability checks	unit and constructi on site	Weekly inspection	
Waste disposal, insufficient procedure for waste collection, storage, and disposal	To check the availability of waste management system and implementatio n	Inspection of waste generation, collection, storage, and disposal will be undertaken at each site of the project activity	Visual inspection	unit and pipelines constructi on sites and camp sites	Once daily	

7.5 ENVIRONMENT MANAGEMENT PLAN FOR OPERATION PHASE

This section outlines the aspects that will be covered in the EMP for the operational phase of the proposed unit. The purpose of an EMP is not only to address the expected environmental impacts of a project, but also to enhance project benefits, and to introduce standards of good practice to be adopted for all projects works.

Table 7.4: ENVIRONMENTAL MANAGEMENT PLAN FOR OPERATIONAL PHASE

Sr. #	Project Component or Impact	Target	Action	Responsibility
01	Overall environmental impacts	To reduce overall negative impact of the project and structures on the environment and conserve natural resources.	• Should take all possible measures to ensure that operation of the project does not harm the environment	Proponent/ Management
02	Noise & Vibration	To ensure that the noise levels do not exceed the limits.	• Put silencers on the machines. • Isolators should be made for the absorption of vibrations. • Workers should be told and encouraged to use PPE's (ear plugs or ear muffs). • Proponent has planned a proper plantation plan which will also act as barrier for noise.	Proponent/ Management

03	Waste water &Water Conservation	To conserve water	• The liquid effluents from the project operation should be properly treated before disposal by employing adequate Waste Water Treatment Plant (WWTP). • Discharges of solvents should not be allowed to enter in the main fresh waste stream. • Workers should be regularly advised on importance of water conservation so as to preserve water	Proponent/ Management Committee
04	Air Quality	To ensure that the pollution levels do not exceed the limits	• No waste should be burnt at the premises. • Workers should be advised to keep their vehicles and machines in good working order to minimize emissions.	Management

			• Boiler will be provided with the scrubbing unit to avoid the emission of hazardous gases.	
05	Traffic congestion	To mitigate the traffic problem	• There should be prohibition on roadside parking. • Parking spaces would be provided within the area.	Proponent/ Management
06	Energy Conservation	Conservation of energy and use of environmental-friendly energy sources	• Efforts should be made to ensure that energy is conserved and that environment-friendly techniques are adopted too.	Proponent/ Management
07	Solid Waste Management	To manage waste in an environment friendly manner.	• The solid waste from the project should not be allowed to pile up at the temporary storage site. • Generated solid waste should be disposed off according to TMA facilities.	Proponent/ Management
08	Security	To secure the lives of employees and nearby area.	• All possible measures should be taken to maintain security at all times.	Proponent/ Management

09	Emergency Response	To deal with any emergency efficiently.	• You should have an emergency escape plan in place.	Proponent/ Management
10	Environmental Monitoring	To ensure that periodic reports on environment at the project site are furnished to EPA in pursuance of conditions of the environmental approval.	• A mechanism should be employed for Environmental Monitoring at the project when it comes into operation	Proponent/ Management

7.5.1 COMMUNICATIONS AND DOCUMENTATION

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

MEETINGS

Two kinds of environmental meetings will take place during the project:

- Kick-off meetings
- Weekly meetings

The purpose of the kick-off meeting will be to present the EMP to project staff and discuss its implementation.

A weekly meeting will be held during operations. The purpose of this meeting will be to discuss the conduct of the operation and environmental issues and their management. The proceedings of the meeting will be recorded in the form of a weekly environmental report.

CHANGES-RECORD REGISTER

A change-record register will be maintained at the site, in order to document any changes

in project design. These changes will be handled through the change management mechanism.

ENVIRONMENTAL TRAINING

Environmental training will help to ensure that the requirements of the EIA and EMP are clearly understood and followed by all project personnel in the course of the project.

Table 7.5: Training Program

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

7.5.2 MONITORING PLAN

The monitoring of the EMP and the communication and documentation mechanism that will be employed during the operational phase will be based on the Environmental Management System (EMS) of the project proponents. The management system of the project proponents will be the same as the certified EMS in place at the company.

Table 7.6: Environment Monitoring Plan

Potential activity and potential impact	Objective of monitoring	Parameter to be monitored	Measurement	Location	Frequency	Responsibility
Disturbance due to noise from operational activity	To determine the effectiveness of the noise abatement measure on the sound pressure level	Noise level near the receptor	Noise Measurement	At least three location on the plant boundary and three location at the receptor level	Quarterly	Environment officer
Emission of exhaust gasses which may pollute the environment	To determine the effectiveness of the air pollutants abatement device	Source Emission parameters	PM, SO2, NOx, CO	Exhaust Chimney	Monthly	Environment Officer/Manager
Disposal of waste water / effluent	To determine the NEQS compliance	Waste water parameters	PH, Temp. BOD, COD, TSS, TDS, Copper, Chromium	Final Disposal	Monthly	Environment Officer
Soil contamination due to leakage of oil and dyes/chemi	To determine the effectiveness of the control measures taken to minimize the	Procedure in place to handle the liquids and availability of procedure and equipment for	Visuals inspections and availability checks	unit, machinery and other suspected	After every three month	Environment Officer

cals on the ground	spillage of oil and chemicals.	emergency response		places		
Waste disposal, procedure for waste collection, storage, and disposal	To check the availability of waste management system and implementation	Inspection of waste generation, collection, storage, and disposal will be undertaken at each site of the project activity	Visual inspection	Entire unit	Once daily	Administration Officer

Chapter 8: Conclusion & Recommendations

CHAPTER VIII:
CONCLUSIONS AND RECOMMENDATIONS

M/S Jhang Fabrics (Pvt.) Limited manufacture the fine paper located 4-KM Jaranwala Road, Khurrianwala, Faisalabad. The project falls under Schedule-II (List of projects requiring an EIA). The project requires an Environmental Impact Assessment (EIA). In order to ensure compliance with the lawful provision of section 12 of PEPA 1997 (Amended 2012) read with IEE/EIA Regulations 2022, the Environmental Impact Assessment Report has been prepared and is being filed to the Environmental Protection Agency, Lahore for issuance of environmental approval.

Accordingly, this EIA report describes social, environmental, physical and other relevant aspects of the project during operational stage and at its regular occupancy. The report also specifies necessary measures to be adopted for mitigation of environmental impact on the environment. It also provides information as desired under the format used for the preparation of this EIA Report.

However, the environmental aspects and impacts associated with manufacturing of gray cement considered. All infrastructure e.g., road, sewerage, water supply, electric supply, gas etc. already exist in the project area. The project is an environmental friendly site. Septic tanks are provided in the site premises for the treatment of domestic wastewater. Total solid waste generated from the project plant comprise mainly of paper, plastics organic matter and food waste. The project has its own administration set up for environmental monitoring and maintenance of site during operational stage. In order to handle fire hazards, fire hydrants and sprinklers are provided at many locations within the premises. The baseline study has been conducted reviewing the available literature. The overall impact of the project can be considered positive.

For the effective implementation and management of the mitigation measures, an outline Environmental Management and Monitoring Plan (EMMP) has been developed.

M/S Jhang Fabrics (Pvt.) Limited is also based on the principles of sustainable development.

8.1 CONCLUSION

In view of the above it has been concluded that manufacturing of Paper at M/S Jhang Fabrics (Pvt.) Limited is environmental friendly and sound practice. It is therefore requested to issue the environmental approval under section 12 of PEPA 1997 (Amended 2012) for the project that is M/S Jhang Fabrics (Pvt.) Limited.

8.2 RECOMMENDATIONS

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

- The present EIA Report of M/S Jhang Fabrics (Pvt.) Limited meets the administrative and legal framework of the EPA Punjab.
- Implementation of EMP must be given top priority.
- During construction phase Create environmental awareness amongst the workers by training.
- Provide guidance to workers on use of PPEs and also make it compulsory for them to use PPEs during construction.
- Installation of fire extinguishers in the premises.
- Use of equipment with low operating noise levels within PEQS limits and regular monitoring of machines used during construction phase.