

## EXECUTIVE SUMMARY

This executive summary presents an overview of the main findings of the Environmental Impact Assessment Report for Ahmad Amin Textile Industries at 6 chak borewal road near ghumman swimming pool Faisalabad. The main goal of this project is to establish a dyeing and printing unit to cope with growing market need and remain competitive in the market.

The said Environmental Impact Assessment (EIA) study will cover the sections-12 for Environmental Approval Punjab Environmental Protection Act, Amended 2012. Furthermore, the study provides relevant information, as required under the officially approved format, to help the decision makers i.e. EPA Punjab before issuing the Environmental Approval.

The main findings of Environmental Impact Assessment (EIA) of Ahmad Amin Textile Industries. The primary objective of dyeing is to apply uniform color to the substrate (fabric) with required color fastness. The main objectives of this Environmental Impact Assessment (EIA) Report are to identify the baseline environmental, biophysical and socio-economic conditions, to examine project alternatives including alternate sites, and to study the potential impacts along with formulation of suitable mitigation measures for an environment friendly implementation of the proposed project site and around the project area.

**Table 1: Salient Features of the Project**

|     |                                                                 |                                                                                                                                                           |
|-----|-----------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1.  | <b>Project Title</b>                                            | Ahmad Amin Textile Industries                                                                                                                             |
| 2.  | Project Location                                                | 6 chak borewal road near ghumman swimming pool Faisalabad.                                                                                                |
| 3.  | Proponent<br>R/O<br>CINC                                        | Muhammad Amin S/o Abul Rehman<br>House No.26, Ismail Road, Lasani Garden, Faisalabad.<br>33100-5760156-5                                                  |
| 4.  | Consultant                                                      | <b>Green Star Environmental Consultancy.</b><br><b>Address:</b> City business centre G.T road, near PSO Okara.<br><b>Phone:</b> 0333-6977622, 03116865251 |
| 5.  | Total Area<br>Purposed Covered Area<br>Total Open Area          | 24 Kanal 10 Marla<br>106722 SFT<br>26680.5 SFT                                                                                                            |
| 6.  | Total Production Capacity                                       | <b>15000 to 16000 meter/day</b>                                                                                                                           |
| 7.  | Location of project                                             | 31°30'41.2"N 73°02'33.2"E                                                                                                                                 |
| 8.  | Nature of Area                                                  | Self-develop Industrial Area                                                                                                                              |
| 9.  | Present status of Land Use                                      | Open/Vacant land                                                                                                                                          |
| 10. | Land use in the surroundings of project site.<br>North<br>South | The project is located in self-develop industrial area.<br>The surroundings are:<br>Open/Vacant land<br>Road                                              |

|     |                                                                                    |                                                                                                                                                                                                                                                                                                                                                                                                                    |
|-----|------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|     | East<br>West                                                                       | Constructed Unit<br>Open/Vacant land                                                                                                                                                                                                                                                                                                                                                                               |
| 11. | Cost of Project                                                                    | PKR 135 million                                                                                                                                                                                                                                                                                                                                                                                                    |
| 12. | Raw material                                                                       | The raw materials i.e., ecru fabric (fabric that is undyed /raw) will be outsourced and the final product will be a dyed fabric                                                                                                                                                                                                                                                                                    |
| 13. | Product                                                                            | Dyed Fabric<br>Printed Fabric                                                                                                                                                                                                                                                                                                                                                                                      |
| 14. | Purpose of proposed project                                                        | The primary objective of dyeing is to apply uniform color to the substrate (fabric) with required color fastness. The project, namely Ahmad Amin Textile Industries, will be developed at 6 chak borewal road near ghuman swimming pool Faisalabad. The proponent intends to develop a total area of 24 Kanal and 10 marla for the dyeing and printing unit. The estimated cost of the project is PKR 135 million. |
| 15. | Nearby emergency services i.e. Hospital, police station, rescue, fire brigade etc. | At a distance of 5-6 km                                                                                                                                                                                                                                                                                                                                                                                            |
| 16. | Tree Planation                                                                     | At Designated Green Areas                                                                                                                                                                                                                                                                                                                                                                                          |
| 17. | Water Source                                                                       | Ground Water                                                                                                                                                                                                                                                                                                                                                                                                       |
| 18. | Source of Power                                                                    | WAPDA (LESCO)                                                                                                                                                                                                                                                                                                                                                                                                      |

## **1.0 Project Description**

The said project is basically a part of textile sector that deals with the manufacturing of textile product, it will be a dyeing and printing unit namely Ahmad Amin Textile Industries at 6 chak borewal road near ghuman swimming pool Faisalabad..

### **Impacts and Recommended Mitigation Measures**

In order to identify all the impacts associated with the project during construction and operational activity with potential to cause adverse environmental impacts, a thorough review has been conducted. Although, there is very low chances of any adverse impact occurrence on the surrounding environment. However, in case of impact arises from the project activity possible necessary measures will be adopted to control the same. Overall the project has positive social impacts specifically on the local population and generally contributes in Pakistan's GDP. The project may have some adverse environmental impacts of minor to moderate magnitude which will be controlled through mitigation measures proposed in Environmental Management and Monitoring Plan (EMMP). Moreover, there is no tree present on site, few patches of bushes and grass are present, and restoration and reclamation will be carried out by the plantation of native species in specified green areas. Environmental impacts have been identified and mitigation

measures are recommended within the Project Area of Influence. The major impacts on physical, biological and social environments are described as under:

**Table 2: Impact Summary**

| Environmental Parameters                                                                                                                      | Impact Assessment during Different Phases |             |
|-----------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------|-------------|
|                                                                                                                                               | Construction                              | Operational |
| <b>A: Physical</b>                                                                                                                            |                                           |             |
| <b>Land Resources</b>                                                                                                                         |                                           |             |
| Soil Erosion and Contamination                                                                                                                | -2p                                       | 0           |
| Transportation                                                                                                                                | -1t                                       | -1t         |
| Solid Waste and By-Products                                                                                                                   | -2t                                       | -2p         |
| Land Use                                                                                                                                      | -2p                                       | NA          |
| <b>Air Resources</b>                                                                                                                          |                                           |             |
| Noise Pollution                                                                                                                               | -1t                                       | -1t         |
| Air Emission                                                                                                                                  | -1t                                       | -1t         |
| Dust                                                                                                                                          | -1t                                       | -1t         |
| Odor                                                                                                                                          | NA                                        | -2t         |
| <b>Water Resources</b>                                                                                                                        |                                           |             |
| Ground Water                                                                                                                                  | -1p                                       | -1p         |
| Surface Water                                                                                                                                 | NA                                        | NA          |
| Wastewater                                                                                                                                    | -1p                                       | -2p         |
| <b>B: Ecological</b>                                                                                                                          |                                           |             |
| <b>Flora</b>                                                                                                                                  |                                           |             |
| Tree Cutting                                                                                                                                  | -1p                                       | +1p         |
| <b>Fauna</b>                                                                                                                                  |                                           |             |
| Terrestrial Fauna                                                                                                                             | -1p                                       | +1p         |
| <b>C: Socio-Economic</b>                                                                                                                      |                                           |             |
| Employment Opportunities                                                                                                                      | +1t                                       | +1p         |
| Land Value Appreciation                                                                                                                       | +1t                                       | +2t         |
| <b>D: Hazards</b>                                                                                                                             |                                           |             |
| Biological Hazards                                                                                                                            | NA                                        | NA          |
| Physical Hazards                                                                                                                              | -1t                                       | -1p         |
| Chemical Hazards                                                                                                                              | 0                                         | -1p         |
| Health and Safety                                                                                                                             | -1t                                       | -1p         |
| <i>Legends: 1= Low; 2= Medium; 3= High; 4= Extremely High; NA= Not Applicable; t= Temporary; p= Permanent; app= Applicable; 0= Negligible</i> |                                           |             |

## 2.0 Environmental and Social Monitoring Plan

Environmental Management and Monitoring Plan (EMMP) were developed for effective implementation of the recommended mitigation measures. The EMMP includes check and balance to control and minimize the identified impacts and monitoring programs to oversee residual impacts, if any, during the operational phase. The EMMP describes procedures to be followed throughout the construction and operation of the project. It also identifies the roles and responsibilities of all concerned personnel, including the persons reporting during the different project phases. Mitigations for physical, biological and socio-economic parameters will be measured to determine compliance with standards established in

EMMP. The Monitoring Plan will record the inputs provided by various participants in the environmental and social management process. It will also check whether the prescribed national and provincial guidelines and plans are being followed and that the required mitigation measures and activities are being accomplished in time.

### **3.0 Monitoring Plans**

During operational phase, monitoring is required to be carried out at least once in a month during rainy season to check the soil contamination and surface water level/condition. Moreover, periodic monitoring should also be carried out regarding ambient air quality, noise and dust level and worker safety. A detailed site monitoring plan has been developed and given in Chapter-7 of this EIA Report.

### **4.0 Conclusion**

The findings of EIA Report showed that although the Ahmad Amin Textile Industries is expected to have significant minor to moderate negative impacts on the environment during the construction and operational phases, but the severity of these adverse impacts can be reduced significantly by adopting EMMP with true spirit as proposed in the Chapter 7 of this EIA Report. The impacts were assessed by frequent site visits, studying related projects and by reviewing the documents. Generally, the project is planned to follow efficient environmental management systems. Specific environmental and social benefits have been mentioned below which depend on the proper application of mitigation measures suggested in EMMP and best engineering practices.

### **5.0 Recommendations**

The intensity and severity of impacts occurred due to the processing varies with change in the nature and magnitude of the project as well as depends upon the baseline environmental conditions of the area. The mitigation measures will require constant information flow and consultation with the stakeholders to ensure the least adverse social-economic impact to outweigh the “no project development” scenario.

- ⊙ The adverse environmental impacts can be reduced significantly by adopting best management and monitoring practices as well as by implementation EMMP with true spirit
- ⊙ Proper PPEs including gloves, face masks, head gear etc. will be provided
- ⊙ No compromise on public health and environment should be allowed
- ⊙ Waste minimization practices should be introduced to workers by conducting lectures on spot to aware the workers about the long-term benefits of the same in lieu of surrounding environment
- ⊙ A proper tree plantation plan should also be developed in order to make the process environment friendly
- ⊙ Small domestic waste storage bins should be placed at different locations for proper collection and disposal of the solid waste
- ⊙ It is recommended that the Proponent should obtain an Environmental Approval (NOC) from the Punjab-EPA before proceeding further.

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## 1. SCREENING AND SCOPING

### 1.1 Screening/Type and Category of Project

Section 12 of Punjab Environmental Protection Act, 1997 (amended 2012) states “No proponent of a project shall commence construction or operation unless he has filed with the Government Agency designated by Federal Environmental Protection Agency or Provincial Environmental Protection Agencies, as the case may be, or, where the project is likely to cause an adverse environmental effects an Environmental Impact Assessment (EIA), and has obtained from the Government Agency approval in respect thereof.” Punjab Environmental Protection Act provided the guidelines for categorizing the projects. According to **Schedule-II** of IEE and EIA Regulations, 2022; the proposed project falls under **Category B (6) Textile Unit Comprising of Dyeing & Printing** i.e., the project requires an EIA Study. Thus, an EIA Report is being prepared and submitted accordingly for approval.

The proposed project is a dyeing and printing unit.

### 1.2 Scoping:

#### 1. 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 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.

- Temporal Extent (during construction and operation)
- Spatial Extent (local or widespread)

#### 2. Views, Concerns and Suggestions of Various Stakeholders

Community showed a lot of concerns; a few are being mentioned here:

- ✚ Removal of shrubs and trees should be avoided to the extent possible
- ✚ The project will become the source of income for local to earn their livelihood easily and honorably
- ✚ The area will become further industrialized
- ✚ For the solid waste management and waste disposal, proper disposal techniques should be adopted
- ✚ Employment opportunities will be generated, and locals should be hired on the priority basis
- ✚ The air pollution is one of the major impacts of the proposed project, so ambient air quality should be monitored regularly
- ✚ Water spraying/sprinkling should be done on the regular basis during construction phase to avoid dust emissions
- ✚ Removal of shrubs and trees should be avoided to the extent possible

- ✚ Good relations with the local communities will be promoted by encouraging Contractor to provide opportunities for skilled and unskilled employment to the locals as well as on-job training
- ✚ The contractor should prefer hiring local labor from adjacent nearby villages
- ✚ Indigenous trees around the facility should be planted to control air pollution and as the compensation
- ✚ Noise reducing barriers should be installed to reduce noise pollution as the nearest community lies within the radius of 0.5 KM

### **Concerns**

- ❖ Workers should be hired from local community
- ❖ Proper disposal of solid waste should be practiced
- ❖ Proper disposal of wastewater should be practiced
- ❖ Indigenous trees around the facility should be planted to control air pollution
- ❖ Removal of shrubs and bushes should be avoided to the extent possible

### **3. Significant impacts and factors to be determined**

The proposed project is the Ahmad Amin Textile Industries. The nature of the land is self-develop industrial and current status of land is open land having native vegetation such as Neem, Kikar, Safeda and wild grass. The study area is present within the premises of already constructed building for steel manufacturing product. In addition, to the noise and fugitive dust emissions during the development phase solid waste management and disposal issues may arise along with wastewater disposal issues. There are few minor impacts associated with the operation of manufacturing unit includes the management of the municipal solid waste generated during the, raw-material storage which will be managed according to local practices of area.

The impacts from the dyeing and printing unit will occur during the construction and operation due to the civil work involved and the people residing in the project area. These issues included; noise generation, fugitive dust emissions, solid waste management, wastewater disposal, top-soil removal, Health and Safety issues and change in the geographic features of the area. These all problems should be addressed on-site where they are being generated, to avoid the residual or adverse impacts.

#### **1.3 Alternatives**

The details of the site alternatives and technology alternatives are discussed below:

##### **Site Alternatives**

No other site alternative was available to be considered as feasible option for the installation of the plant.

##### **Design/technology alternative**

The project technology will be up to date and will also environment and eco-friendly. So, no other technology will be taken under consideration.

***Environmental Alternatives:***

No important religious, archaeological, recreational site or ecologically/declared protected area and human settlement exists within proximity of the selected site i.e., within 5 Km which is a safe distance. In view of these facts, it can be concluded that the selected site is best suited for the project and will not pose any adverse impact or threat on any component of the environment.

***Economic Alternatives:***

The technology selected for establishment of above stated project will be economical viable than alternatives present as compared to majority of the other available production technologies, but it will be most efficient and convenient to use.

## **2. DESCRIPTION OF PROJECT**

This section of the study concentrates on details of the project and its salient features; such as its location, site layout, objectives, selection of alternative sites and technology, cost and magnitude of operation at various phases and process employed for the processing of the proposed project.

### **2.1 Type & Category of Project:**

According to **Schedule-I** of IEE and EIA Regulations, 2022; the proposed project falls under **Category B (6) Textile Unit Comprising of Dyeing & Printing** i.e., the project requires an EIA Study. Thus, an EIA Report is being prepared and submitted accordingly for approval.

### **2.2 Objectives of Project**

The main objectives of the proposed project are as under:-

- ❖ The primary objective of dyeing and printing is to apply uniform color to the substrate (fabric) with required color fastness
- ❖ To develop long term strategic business relationship with customers and suppliers.
- ❖ Be fully integrated with and supplement the existing infrastructure in the city.
- ❖ Delivering innovative, high-quality products that help people live better.
- ❖ To conserve and protect environment by using latest techniques.
- ❖ To provide the employment to the people.
- ❖ To change the social life style of the area
- ❖ Revenue generation for the Govt.
- ❖ To upgrade the socio-economic conditions of the area

### **2.3 Location and Layout of Project**

The proposed location for the installation of proposed project of Ahmad Amin Textile Industries at 6 chak borewal road near ghumman swimming pool Faisalabad. The geographical location of the proposed area is 31°30'41.2"N 73°02'33.2"E



**Proposed Project Site**

## **2.4 Site Alternatives**

No other site alternative was available to be consider as feasible option for the installation of the plant as the land is owned by the proponent. The proposed site was selected because of the following reasons;

- 1) The site is at the safe distance from the nearest residential area.
- 2) The site is present within the self-developed industrial area.
- 3) The site is well connected to the other parts of the city through metaled road.
- 4) No human settlements displacement or relocation associated with the project development and operation
- 5) Operation of the proposed unit in the respective zone will provide job opportunities to local people and will improve their socio-economic status of the study area as 100+ employees will be hired during the operational phase

## **2.5 Design/technology alternative**

The project technology will be up to date and will also environment and eco-friendly. So, no other technology will be taken under consideration.

## **2.6 Pictures of Project Site**



## **2.7 Land Use on Site:**

The surface of the project area is leveled and is within the premises of existing unit. No ecology sensitive receptor such as; forest or reserved area is present within 5 km vicinity that could be affected due to the installation and operation of the aforesaid project.

## **2.8 Road Access**

The project site is linked to main Faisalabad Road.



**Figure 1: Road Access Map**

## **2.9 Vegetative Features**

The area around the project is self-developed industrial in nature. The main plantation around the project area includes; safeda, bari, neem and kikar.

## **2.10 Cost and Magnitude of Operation**

The proposed project includes the production of steel products. List of machinery is attached as an annexure with the EIA report.

- The activities will include:
- Installation of the machinery.
- Installation of the filtration and liquid unit.
- Health and Safety Management at site
- Transportation of raw-material and final product
- Plantation of trees

## **2.11 Schedule of implementation**

It is projected that the construction phase of entire project will be started after getting environmental approval from EPA Punjab and complete in the period of 5-6 months. Activities involved are:

- Assessment of environmental impacts and its mitigation measures
- EIA approval, other local issues
- Implementation of recommended alteration in system, if required
- Commencement of operation

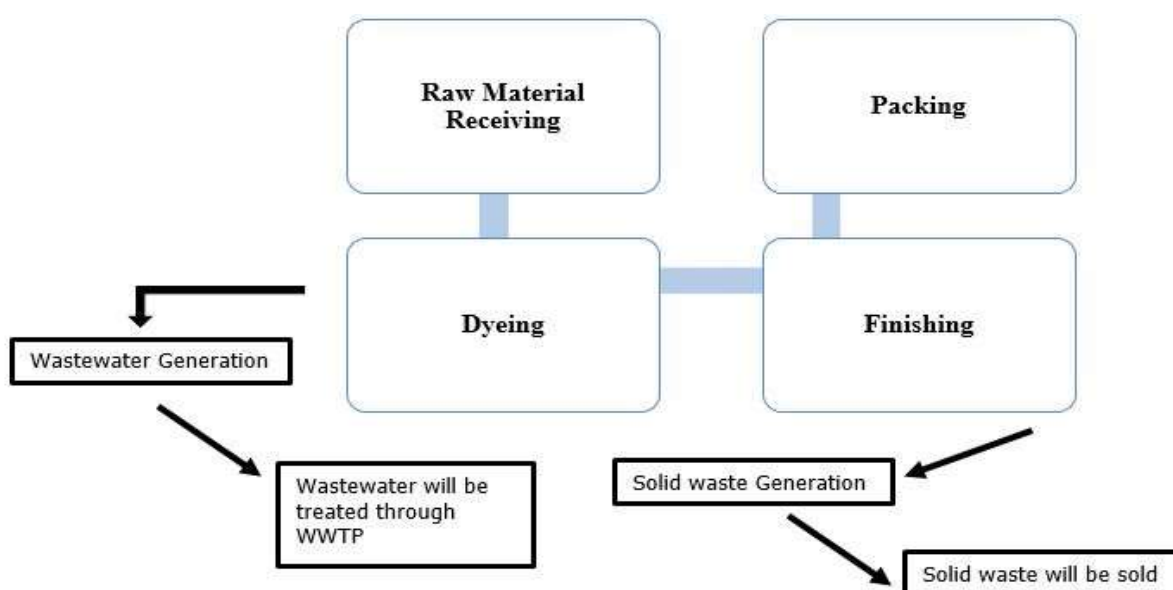
## 2.12 Process Description

The main goal of this project is to establish a dyeing and printing unit to cope with growing market need and remain competitive in the market. It is envisaged that the building will provide the benefits of proximity to jobs and/or public transportation to become the ultimate convenient place for work and live with ease.

### Basic Raw Materials Required by the Proposed Unit

| Description of raw material              | Source                               | Quantity             |
|------------------------------------------|--------------------------------------|----------------------|
| ecru fabric (fabric that is undyed /raw) | Local purchase (imported/scrap yard) | 15000 to 16000 M/day |

#### a) Production process or Process Flow



#### b) Process Flow

##### 1. Receiving of Raw Material

First, The raw materials i.e., ecru fabric (fabric that is undyed /raw) will be purchased from the local market

##### 2. Dyeing

Dyeing is the process of adding Color to Fabric. It will be done by soaking the fabric in a liquid that contains a dyestuff.

##### 3. Finishing

This process will include checking of the dyed fabrics by the quality checker to ensure that fabric have been dyed as per buyer quality standards.

#### 4. Packaging

The Dyed fabric are bundled together and each labeled with Ahmad Amin Textile Industries sticker with relevant information such as size, batch number etc. These are then transported to construction sites or distributors.

#### 9. Delivery

Ahmad Amin Textile Industries ensures fast, efficient delivery of dyed fabric to distributors.

Figure 2: List of Chemicals and Dyes

| SR. | CHEMICALS                | DYES                         |
|-----|--------------------------|------------------------------|
| 1   | ACETIC ACID              | BAD ACTIVE BLACK CNN         |
| 2   | CRYSTAL SALT/COMMON SALT | BAD ACTIVE NAVY GB           |
| 3   | HYDROGEN                 | BAD ACTIVE YELLOW C4GL       |
| 4   | POLY CREASE              | COLVAZOL BLACK B 150 %       |
| 5   | SODA ASH ICI             | DISPERSE LEMON YELLOW        |
| 6   | SULPHURIC ACID           | COLVAZOL BLUE KNRXN          |
| 7   | SODIUM HYDRO SULPHATE    | DISPERSE ORANGE S4RL         |
| 8   | FORMIC ACID              | SYNOZOL RED HF GD            |
| 9   | POLYESTER LECO           | REMAZOL MID NIGHT BLACK RGBN |
| 10  | GLOBAL SALT/SODIUM SALT  | REMZOLULTRA BLUE RGB         |
| 11  | WET CROWING              | REMZOL CORMICEN RGB          |
| 12  | XYLENE                   | SYNOLON ROBINE SGFL          |

#### 2.13 Management Plans

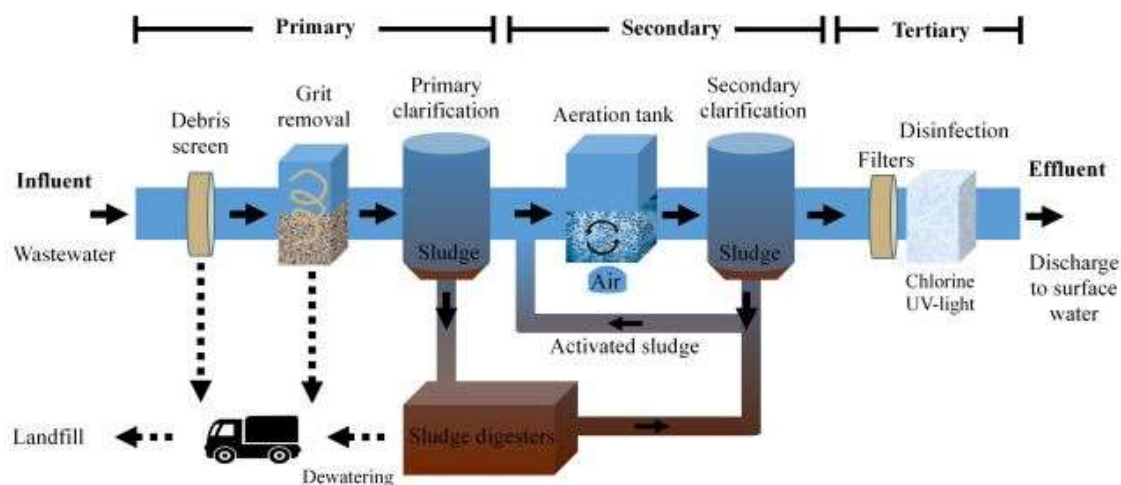
Following management plans will be employed to reduce the impact of the proposed activity

##### a) Air Emissions

Particulate dust will be generated during construction phase and to deal with the air emissions during the operational phase cyclones will be installed with the efficiency of more than 95% keeping in view of PEQs. For safety purpose the workers dealing with the process activities will be provided with masks, safety shoes and all other necessary PPEs. To reduce the public nuisance native trees will be planted on the boundary to reduce the nuisance and to reclaim the disturbed soil effectively.

### **b) Wastewater Management and Disposal**

In the proposed project the wastewater will be generated from process as well as municipal activities. The wastewater from the process activities will be treated by a wastewater treatment plant with the capacity of 2m<sup>3</sup>/shift design of treatment plant is attached as an Annexure with the EIA report. The municipal amount of the wastewater generated will be 200 liters (0.2m<sup>3</sup>) by the sanitation activities if per person wastewater generation is 20 liters and the manpower is 10 (20\*10). This wastewater will be discharged in settling tank and ultimately in the drain.



**Figure 3: Design for WWTP**

It is proposed that tree plantation will also be carried out. The generated wastewater will be consumed for on-site horticultural activities after primary treatment.

### **c) Solid Waste Management**

Most of the solid wastes that will be generated during the daily work can be divided into 2 main categories:

- i. The ordinary household wastes that the workers and the staff generate all-day around; e.g. kitchen and food residues, clothing, personal unneeded articles, etc.
- ii. Municipal residues; e.g. grass clipping, strings, scraps je sort, etc.

Quantity of solid waste will 25 kg/day and is going to be dumped in the containers (number, capacity and type will be identified and sufficient for the needs) which will be emptied by the municipality trash collection cars according to the acting regulations under the supervision of the concerned authorities. Collecting the trash/garbage will be followed on daily basis in disposable environmentally friendly shopping bags. And the waste generated during the process activities or afterwards like Slag waste etc. will be send to a waste disposal facility.

## **2.14 Amenities**

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

### **a) Electricity**

Electricity will be supplied by self-developed Industrial sourced by WAPDA (LESCO).

### **b) Ground Water Resource**

During constructional and operational phase ground water will be consumed which will be supplied by the self-developed Industrial area. For construction purposes water will be pumped from ground from the depth of 250ft. and 200-300 liters/day will be used for the overall consumption.

### **c) Emergency Preparedness**

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

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

### **Safety Trainings**

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

### **Use of Drugs and Narcotics**

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

### **Personal Protective Equipment's**

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

- ✓ **Safety Helmet**
- ✓ **Safety Shoes/Dry Shoes**
- ✓ **Dust Mask**
- ✓ **Safety Gloves**
- ✓ **Safety Jackets**
- ✓ **Earmuffs**
- ✓ **Insulating Gloves and Suits**

## **2.15 Operational hours of facility**

During operational phase of the proposed project about 8 Hours/day will be engaged for the operation of the project.

## **2.16 Restoration and Rehabilitation Plans at the end to the Project Life**

The estimated life of the first phase of the project is approximately 50 years. Much before the project approaches end of its first life cycle it will be completely renovated, refurbished and even new/latest state of the art machinery will replace the old one. All civil structures and related infrastructures will be extensively renovated. Even during its first life cycle, pre-emptive modifications, replacements and refurbishing will be carried from time to time under the “order of the day principle”. This will ensure enhancement of the life of the project at very nominal costs. In this way the project life will be further enhanced for another hundred years or so. All activities will be carried out in accordance with prevailing environmental management laws and controls so as to avoid any damage to any segment of environment of human health around the project site.

### **2.16 Green Features**

#### **a) Rainwater Harvesting System**

A rainwater harvesting system has been incorporated into the project design to promote sustainable rainwater management and utilization. The system will consist of recharge pits connected to the site’s storm water drainage network, enabling efficient collection and percolation of surface runoff within the project premises. Recharge pits measuring approximately 1.5 m in diameter and 4.0 m in depth, fitted with internal gravel filtration media, will be installed at the site.

#### **b) Renewable Energy Production**

At present, no solar system has been proposed as the project is still at its proposed stage. However, the proponent might intends to explore the feasibility of incorporating a solar power system in the future to partially meet the facility’s electricity demand and promote the use of renewable energy for sustainable operations.

#### **c) Tree Plantation Plan**

A tree plantation plan has been integrated into the project, under which 10% of the total project area will be reserved for plantation and landscaping. In accordance with EPA guidelines, trees will be planted within the boundary walls of the project site. Native and pollution-tolerant species such as Neem (*Azadirachta indica*), Kikar (*Vachellia nilotica*), and Eucalyptus (*Eucalyptus globulus*) will be planted along the boundary walls, internal roads, and open areas within the premises.

### **3. DESCRIPTION OF THE ENVIRONMENT**

This section covenants with the prevailing 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, knowledge with the proponent and the concerned government departments and the first-hand surveys and field measurements has been presented in this section. This encompasses all the important aspects of local environment; such as biological resources, socioeconomic development and quality of living values.

#### **3.1 PROJECT AREA**

Proposed project will be constructed on 23 Kanal 10 Marla in Faisalabad. The proposed project site is cleared land, therefore, no tree cutting is involved. Land is owned by the proponent.

#### **3.2 Methodology**

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

#### **3.3 Data Collection**

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

#### **3.4 Social Survey**

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

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

### **3.5 Review of Legal and Administrative Framework**

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

### **3.6 Baseline Conditions**

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

### **3.7 PHYSICAL RESOURCES**

#### **3.7.1 Topography, Geology and Soil**

Faisalabad district is located in the rolling flat plains of northeast Punjab, and 16.6% of the area falls in the Rechna Doab Upland Area, because of which, the area is a vast alluvial plain formed by the rivers Ravi and Chenab. The area has a mild slope from northeast to southwest with an average of about 0.2 to 0.3 m drop per kilometer or about 1 to 1.5 ft per mile. Faisalabad City is situated at an elevation of about 183.4 m or 612 ft above mean sea level (MSL). The topography is marked by valleys, local depressions, and relatively high ground.

The City District is located on land formed by relatively older alluvium deposit found in the central part of the Doab. Because of its elevation above the bordering flood plains, the Upland is generally beyond the reach of flood spills, which is the significant physiographic feature of the alluvial plain.

The Ravi River flows on the eastern border and the Chenab River on the western boundary of Faisalabad. No other important river or nullah flows through the district. The Lower Chenab Canal and the Rakh Branch Canal are the sources of surface water for the district. There are no lakes, water ponds, or marshes in the district.

### 3.7.2 Climate

Faisalabad district belongs to the semi-arid region of Pakistan. The climate of the district is generally very hot during the summer and very cold in the winter. The summer season starts from April and continues till September, with May, June, and July being the hottest months. The extreme maximum temperature during summer touches 50 °C and can go down to -2 °C in winter. The mean maximum and minimum temperatures in the summer are 39 °C and 27 °C respectively. During the summer, dust storms are frequent, and sometimes the intensity is such that thatched roofs can be blown away and trees uprooted; however, with the extension of irrigation facilities, both the frequency and intensity of these storms has been reduced considerably.

The winter season starts from November and lasts till March. December, January, and February are the coldest months. The western disturbances frequently affect the weather in the cold season; this phenomenon generally becomes active from mid-December, and well-marked cold fronts are formed in the fold of these disturbances. The mean maximum and minimum temperatures in the winter peak are around 17 °C and 6 °C respectively. The Monsoon starts from July and lasts till the end of September. The average yearly rainfall is only about 300 mm (12 in), and is highly seasonal, with approximately half of the yearly rainfall occurring in July and August

### 3.7.3 Rainfall

Generally, Faisalabad experiences moderate precipitation patterns, averaging 530 mm yearly. Significant seasonal changes in precipitation occur throughout the year. In the wettest month, July it receives high rainfall, averaging 116 mm of precipitation, recorded across 10 rainy days. In contrast, the driest month November brings less rainfall, with 7.8 mm over 2 rainy days

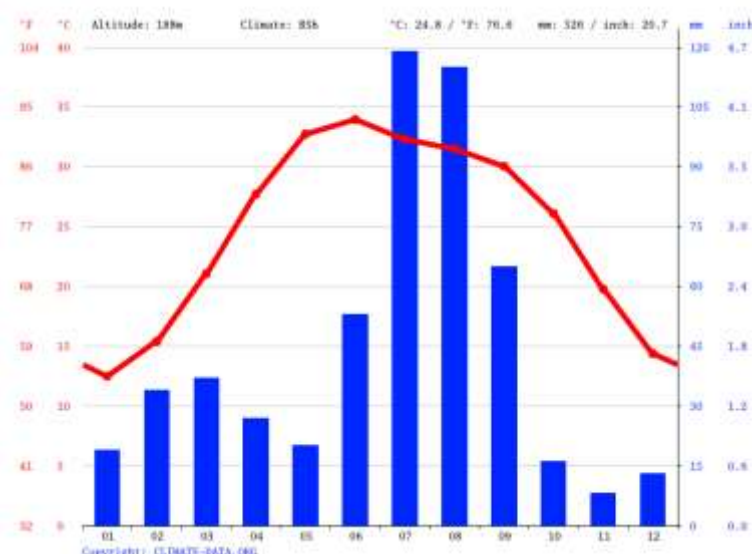


Figure 4: Climate Graph showing Temperature and Rainfall

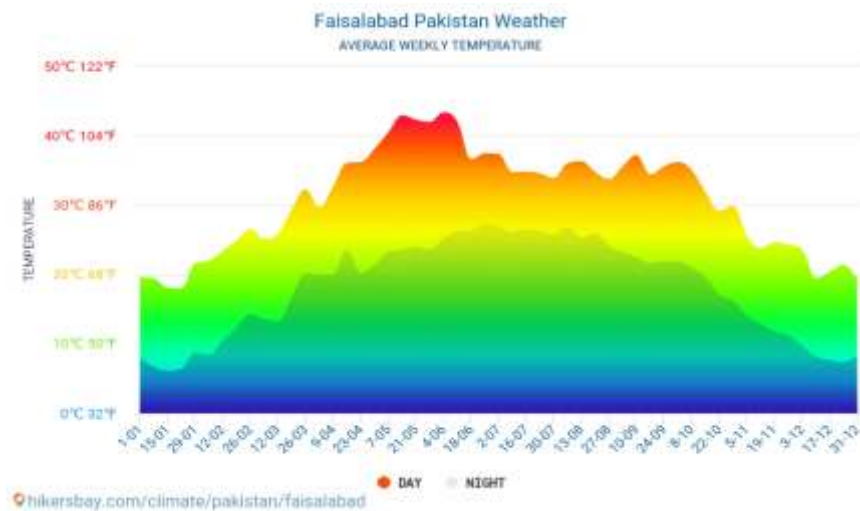


Figure 5: Average Temperature Graph

### 3.7.4 Seismicity

According to Seismic Zoning Map of Pakistan the proposed project area falls in Seismic Zone 2A. This map indicates zones according to the Building Code of Pakistan – 2007. Figure 6 presents the WHO Seismic Hazard Map of Pakistan clearly depicting Multan in a category of medium intensity level.

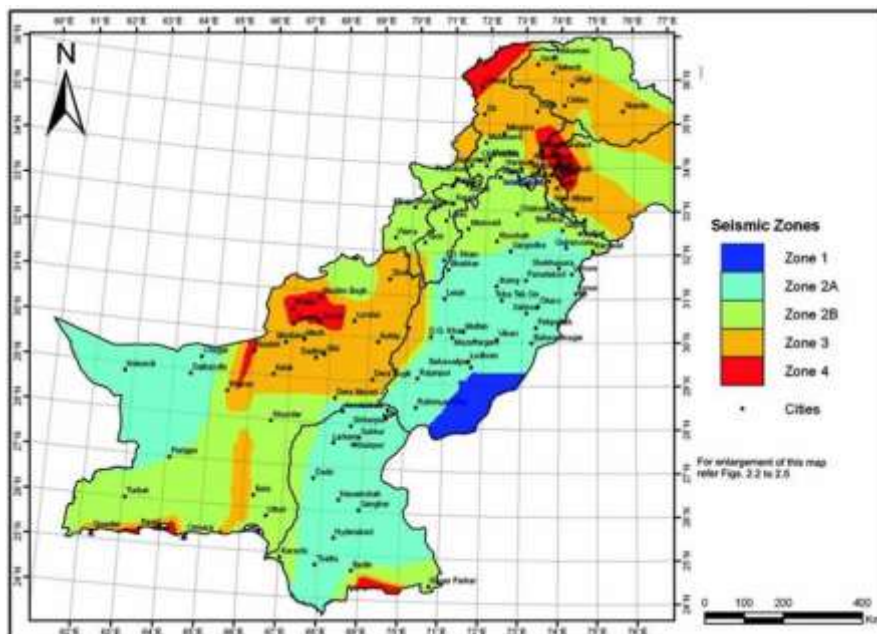


Figure 6: Seismic Zoning Map of Pakistan

### 3.7.5 Ground Water and Water Supply

Faisalabad's groundwater flow is influenced by the Rechna Doab and the Lower Chenab Canal, with a general decreasing groundwater level due to increased water demand from population growth and industry. The primary flow direction is often from areas of higher recharge (like canals) to areas of higher

pumping. However, over-extraction has led to declining and deteriorating groundwater quality, with some areas showing an increase in marginal and hazardous quality groundwater. There is no surface water body present on or near the project site. Therefore, there should be no impact on these sources of water during the construction. Groundwater sample was taken from the project site and later sent to the Lab for testing.

### **3.7.6 Ambient Air Quality**

Air quality in the project area appears good based on observation during the study period. There are no industrial pollution sources present in the vicinity. The other major source of air pollution is dust arising from construction and other ground or soil disturbance. Near the access roads, when vehicles pass, dust levels will increase. The nearby road is paved but dust levels are elevated when vehicles pass intermittently over the roads based on field observations and may be high enough to obscure vision significantly based on observations. Lab Report is attached as Annexure.

### **3.7.7 Noise**

Noise from vehicles and other powered mechanical equipment is intermittent. There are also occasional calls to prayer from the local mosques but there are no significant disturbances to the quiet urban setting. However the construction from the proposed project will use powered mechanical equipment. Subjective observations were made of background noise and also of individual vehicle pass by events.

## **3.8 ECOLOGICAL RESOURCES**

A survey of the local biological environment was conducted which includes the study of flora and fauna of the project area. Section below explains the findings based on the social survey conducted during site visit.

### **3.8.1 Flora**

The most common flora of the district includes vann (*Salvadora oleoides*), karil (*Capparis aphylla*), ber (*Zizyphus jujube*), malha (*Zizyphus nummalate*), and shisham (*Dalbergia sissoo*). Grasses include chimber (*Eleusine egyptica*), lambh or pelwakh (*Andropogon ennuclantus*), and Khavi (*Andropogon invernosa*). Linear plantation of the district is mostly of shisham (*Dalbergia sissoo*), and kikar or babul (*Acacia nilotica*), both of which have a mainly protective and aesthetic value.

Gatwala is an important Reserved Forest of Faisalabad City District. At least 58 species of trees have been planted in this irrigated forest, and most of these species are exotic. These include varieties of eucalyptus, like river red gum (*Eucalyptus camaldulensis*), and red iron bark (*eucalyptus crebra*) which can grow in arid climates. Other species include shisham (*Dalbergia sissoo*), mulberry (*Morus alba*), kikar or babul (*Acacia nilotica*), cotton tree (*Bombax ceiba*), and bakain (*Melia azadarach*).

Sandy river banks along both sides of the Chenab River are subject to flooding every year and support coarse grasses like kai (*Saccharum spontaneum*), kundar (*Typha angustata*), and nar (*Phragmites karka*), as well as shrubs like lai (*Tamarix dioca*), and jawanha (*Alhaji maurorum*).

### **3.8.2 Fauna**

There are several kinds of birds and animals that comprise the wildlife in Faisalabad. Some of the animals worth mentioning are the brown bear, common otter, alpine weasel, stoat, barking deer, lynx, white-toothed shrew, Persian wild goat, sand fox, sand cat, gazelle, fishing cat, wild goat, ibex, hog deer, pangolin, grey goral, markhor, rhinoceros, leopard, wild ass, Himalayan bear, and several kinds of sheep.

Some migratory birds found in Gatwala Nature Park include flamingoes, sea gulls, species of duck, whimbrel, egrets, jacana, eagle, herons, falcon, koonj, whimbrel, hubara bustard, goose, cormorant, sandgrouse, bee-eater, king fisher, and many others. The wildlife in Gatwala Park includes chinkara, Sind ibex, gazelles, leopards, and wild sheep. Whereas, No threatened or endangered species found in the project site. No wildlife was present there.

## **3.9 SOCIO-ECONOMIC RESOURCES (QUALITY OF LIFE VALUES)**

Socioeconomic status (SES) is often measured as a combination of education, income and occupation. It is commonly conceptualized as the social standing or class of an individual or group. SES is a key factor that influences quality of life for children, youth and families.

Detailed survey was conducted to identify the socioeconomic status for analyzing quality of life of the respondents of the area. The results are evaluated on the basis of education, income and occupation, which are discussed below:

### **3.9.1 Study Area Profile**

Faisalabad has a strong industrial base that includes textiles, jewelry, home furniture, and pharmaceuticals, assisted by the expanding transport network which includes a newly built motorway as well as highways to Lahore, Multan, Sargodha and Islamabad/ Rawalpindi. Faisalabad is one of 3 planned cities of the country; it was planned in 1880 by Captain Poham Young, and as stated already, was designed to resemble the Union Jack, with 8 radiating roads. These developed into 8 different bazaars, each with different types of markets and goods, and a Clock Tower (Ghanta Ghar) at the center.

Before independence, there were only 5 industrial units in Faisalabad; now there are numerous textile mills, engineering, chemical, and food processing units. Other industries include hosiery, carpets and rugs, nawar and lace, printing and publishing, and pharmaceutical products. The textile industry of

Faisalabad constitutes more than 65% of the textile export market of Pakistan, which itself forms 58% of the total exports from Pakistan. The district grew in importance as part of the grain belt of the Punjab during the British colonization period.

According to the 1998 Census the major employers of the district are (2017 Census results are still awaited):

- Agriculture, with its Allied Livestock Breeding, Fishing (25.2%)
- Manufacturing (11.1%)
- Construction (32.2%)
- Wholesale/ Retail, Restaurant/ Hotels (9.5%)
- Community, Social & Personal Services (12.5%)
- Transport, Storage & Communication (4.4%)
- Others (5.1%)

The district belongs to the Northern Irrigated Agro-Ecological Zone of Pakistan. Agriculture and its allied livestock breeding is the main occupation of the rural areas of the district. Nearly 24.3% of the population is engaged in this occupation. Crops of the district include wheat, cotton, maize, sugarcane, rice, tobacco, bajra, jowar, moong, maash, masoor, gram, oil seeds like mustard & rapeseed, sunflower, barley, groundnut, sesanum, guar seed, linseed, sunn hemp, and fodder.

Fruits of the district include guavas, mangos, citrus, banana, phalsa, pears, peaches, watermelon, musk melon, ber, and dates. Main vegetables are onion, potato, tomato, coriander, garlic, peas, cauliflower, okra, bottle gourd, carrot, turnip, brinjal, chilies, radish, bitter gourd, tinda, spinach, sweet potato, and pumpkin.

### **3.9.2 Literacy Rate/Education**

According to the data collected with the help of a questionnaire, education level of the people living there was as follows: As regard to the level of Educational attainment 15% respondents were having informal education (1-4 years). Another 18% and 20% of respondent were up to primary and middle level, respectively. However, 25% of respondents were matric, while remaining 15% of respondents were had education upto intermediate and 7% were B.A and above.

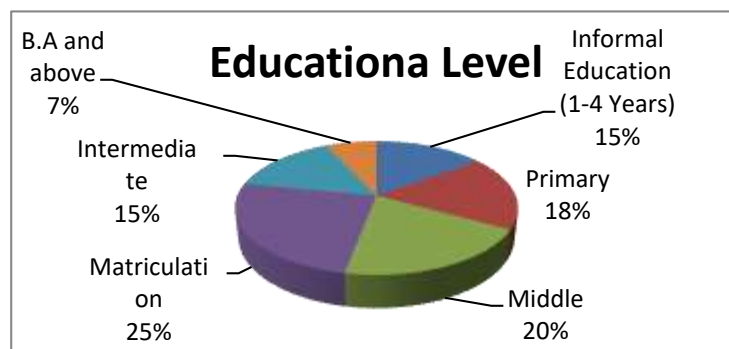


Figure 7: Graph showing Literacy Rate of the Area

### 3.9.3 Income

It is to notify that people living in the vicinity mostly belong to a middle class. Most of the people own small shops and work privately. Monthly income of the residents living in the proposed project area is given in Figure 12.

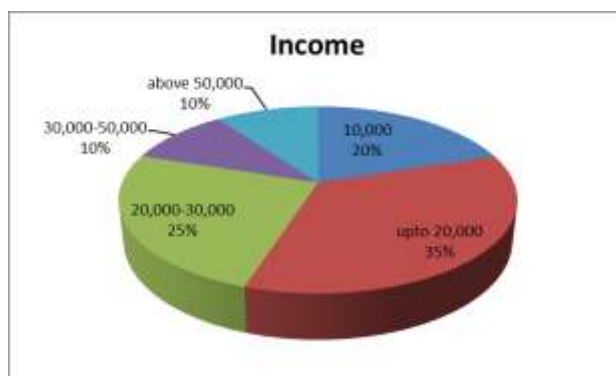


Figure 8: Graph showing Average Income

### 3.9.4 Occupation

Majority of the people belong to medium socio-economic level. They are mostly working privately while some had government jobs but the percentage was very low. Mostly people in the area are shops owners, drivers etc. Percentage of the locals having different occupations is given in graph below.



Figure 9: Occupation of the Locals

### **3.9.5 Social and Cultural Resources**

### **3.9.6 Facilities Available**

Facilities available at the houses, shops and factories are depicted here. It shows that electricity, water supply, telecommunication, sewerage, gas supply and every other routine facility is available in study area.

### **3.9.7 Literacy rate**

From survey results, it was found that 14% of the studied population was illiterate, 7% was up to primary level, 43% studied up to middle level and only 36% of the respondents studied up to higher secondary level.

### **3.9.8 Common Disease**

According to the survey the common diseases recorded in the project area were, Diabetes, Fever, Hepatitis, Hypertension, stomach problems, Malaria, Typhoid, Nephritis and Diarrhea.

### **3.10 Stakeholder Consultation**

Stakeholder's consultancy refers to a process through which the public/stakeholders can influence decisions and share control over development proposals which may affect them. In a participation exercise, the shared analysis, agenda setting and decision making are normally reached through consensus on the main issues between the public and the proponent.

The Punjab Protection Act 1997 (Amended 2012) makes the participation of the local communities mandatory in the planning and design of a development project. United Nations Conference on Environment and Development (UNCED) in 1992 endorsed the process of stakeholders' participation and consultation as one of the key documents of the Conference-Agenda 21. It is obligatory not only to satisfy the legal requirements of the EIA process in Pakistan but also to improve and enhance the social and environmental design of the Project.

Proponent has engaged Central Environmental Services Private Limited (Environmental Consultancy) to carry out the EIA Study for the installation and operation of aforesaid project in accordance with Punjab-EPA guidelines.

#### **3.10.1 Objectives of Stakeholder Consultation**

The aims and objectives of public involvement and consultation of this project include:

- To provide information related to proposed Project activities to stakeholders. Allowing the public to express their views on the scope and content of EIA (and the proposed development action).
- Obtaining local and traditional knowledge (corrective and creative) before decision-making.
- To seek for the participation of all interested parties and to identify stakeholders' interests and issues.
- Ensuring that important impacts are not overlooked.
- Reducing conflict through the early identification of contentious issues.
- Influencing project design in a positive manner.

### **3.10.2 Consultation Process**

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

### **3.11 Lab Reports of Environmental Analysis**

Testing of different parameters was done from a certified laboratory named SEAL to check the quality of different environmental parameters. The copy of the lab reports of these parameters (ambient air analysis, water quality analysis and noise) is attached at Annexure of this EIA Report.

### **3.12 Suitability of Site:**

Comprising all assessment of above baseline data there will be no significant ecological/ environmental impact expected in and around the present selected project site, hence it is suitable for the project.

#### **4. POTENTIAL ENVIRONMENTAL IMPACTS AND MITIGATION MEASURES**

##### **4.1 General**

The potential environmental impacts related to the proposed project have been studied related to design, location, construction and operational stages of the Project. Environmental protection measures are recommended to eliminate adverse environmental impacts or to reduce them to an acceptable level within the prevailing legislative and regulatory framework.

Impacts are evaluated on the basis of magnitude, immediacy and sustainability. Evaluation criteria are as follows:

##### **Magnitude**

Type of impact (direct, indirect, cumulative)

Immediacy

Temporal extent (during construction, after construction)

Spatial extent (local, widespread)

Sustainability and Reversibility

Mitigability (fully, partially)

Monitoring (fully, partially)

The proposed project involves the dyeing and printing which operates as a steel product manufacturing unit. The basic purpose of mitigation measures is to reduce the impacts of the socio-environment up to the maximum possible extent. The mitigation measures are suggested based on the following parameters:

##### **4.1.1 What is the problem?**

The proposed project involves the dyeing and printing. The status of the land is open self-developed industrial. In addition, to the noise and fugitive dust emissions during the development phase solid waste management and disposal issues may arise along with wastewater disposal issues. There are few minor impacts associated with the operation of manufacturing unit includes the management of the municipal solid waste generated during the, raw-material storage which will be managed according to local practices of area.

##### **4.1.2 When problem will occur and when it should be addressed?**

The impacts from the establishment of Ahmad Amin Textile Industries will occur during the construction and operation due to the civil work. These issues included; noise generation, fugitive dust emissions, solid waste management, wastewater disposal, top-soil removal, Health and Safety issues and change in the geographic features of the area. These all problems should be addressed on-site where they are being generated, to avoid the residual or adverse impacts.

#### **4.1.3 Where problem should be addressed?**

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

#### **4.1.4 How the problem should be addressed?**

Proper mitigations measures will be provided according to the nature of the impacts/problems. For example, against dust emissions sprinkling of water may be done on regular basis, for solid waste proper solid waste management and disposal practices may be adopted, to manage liquid waste proper treatment may be made before discharging into the receiving body. The change landscape is estimated to be quite minor and the removed topsoil may be used to reclaim the disturbed areas.

#### **4.2 Ways of Achieving Mitigation Measures?**

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

##### **4.2.1 Changing in Planning Design**

There is no endangered and threatened species present in the project area. Moreover, there is not any human settlement or infra-structure that will be dislocated or dismantled due to the proposed project development. Hence, there is no need to change the design of project.

##### **4.2.2 Improved Management and Monitoring Practices**

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

##### **4.2.3 Replacement/Relocation/Rehabilitation**

The proposed project is located in open land where there is no sensitive area, human population or preserved natural resource is present which could be impacted due to the commencement of the proposed project. No replacement, relocation and rehabilitation will be required for the commencement of the aforesaid project.

#### **4.3 Impact Assessment Methodology**

The impact assessment methodology for the installation of the Ahmad Amin Textile Industries is given below:

##### **4.3.1 Screening of Potential Impacts**

Based on site visit, observation, brain storming, provided information and social interviews, significant impacts were anticipated and evaluated. Then qualitative and quantitative (where possible) assessment of these anticipated impacts is to be carried out.

#### 4.3.2 Identification of Mitigation Measures

After anticipation and screening of significant impacts, certain mitigation measures are to be provided in order to enhance benefits of project and reducing impacts. These measures can be classified as:

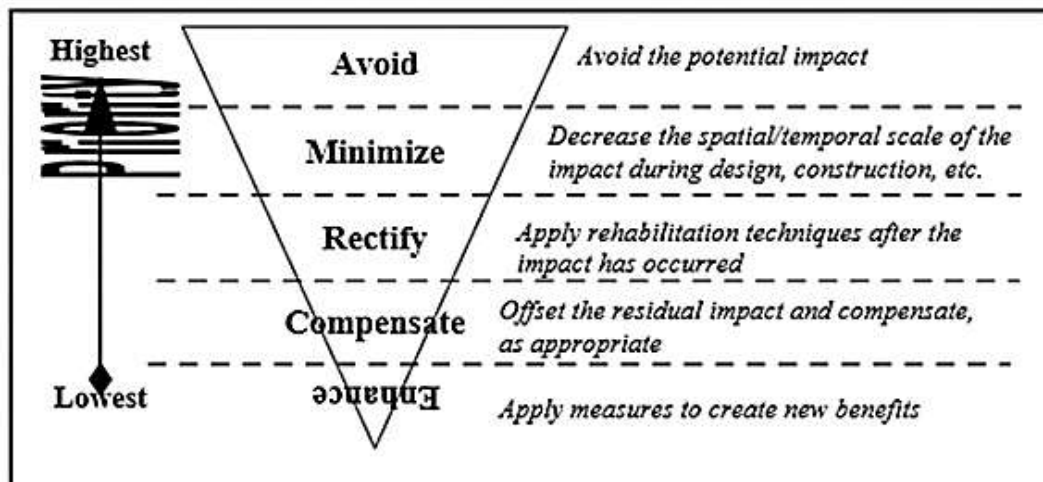


Figure 10: Impact Assessment Hierarchy

#### 4.4 Impact Evaluation

Impact screening checklist and project impact evaluation matrix have been developed to evaluate the potential impacts of the establishment of Ahmad Amin Textile Industries on the basis of set procedures as given in the environmental guidelines by Punjab EPA.

##### 4.4.1 Methodology for Impact Evaluation

These tools have been used to identify the significance and magnitude of the impact as well as the nature, reversibility and extent:

1. An Impact Screening Checklist
2. Project Impact Evaluation Matrix

Following is given a brief description of assessment tools:

##### a) Impact Screening Checklist

The impact screening checklist is developed to screen out the potentially insignificant environmental and social impacts from the potentially significant adverse environmental and social impacts during planning & designing, construction and operational phases of the project. The objective of the impact screening process is to assess the significance of the issues related to the air, water, noise, soil, transportation, communication, the hazards and external constraints. The positive and adverse impacts of the project during planning & designing, construction and operational phases are identified based on their duration, location, frequency, extent, significance and reversibility. Each activity impacts on various environmental parameters are given below:

Table 3: Impact Screening Checklist

| Sr#                | Environmental Component      | Impact Characteristics |       |          |          |           |              |        |       |              |          |       |               |        |
|--------------------|------------------------------|------------------------|-------|----------|----------|-----------|--------------|--------|-------|--------------|----------|-------|---------------|--------|
|                    |                              | Duration               |       | Location |          | Frequency |              | Extent |       | Significance |          |       | Reversibility |        |
|                    |                              | Long                   | Short | Direct   | Indirect | Cont.     | Intermittent | Wide   | Local | Large        | Moderate | Minor | Rev.          | Irrev. |
| Beneficial Impacts |                              |                        |       |          |          |           |              |        |       |              |          |       |               |        |
|                    | Employment Opportunity       | ☐                      |       | ☐        |          | ☐         |              |        | ☐     |              | ☐        |       | ☐             |        |
|                    | Availability of Raw-Material | ☐                      |       | ☐        |          | ☐         |              |        | ☐     |              | ☐        |       | ☐             |        |
|                    | Appreciation in Land Value   | ☐                      |       |          | ☐        | ☐         |              |        | ☐     |              |          | ☐     |               | ☐      |
|                    | Energy Availability          | ☐                      |       | ☐        |          | ☐         |              |        | ☐     |              | ☐        |       | ☐             |        |
| Adverse Impacts    |                              |                        |       |          |          |           |              |        |       |              |          |       |               |        |
|                    | Air Pollution                |                        | ●     | ●        |          |           | ●            |        | ●     |              |          | ●     | ●             |        |
|                    | Wastewater                   |                        | ●     | ●        |          | ●         |              |        | ●     |              |          | ●     |               | ●      |
|                    | Solid Waste and By-Products  | ●                      |       | ●        |          | ●         |              |        | ●     |              | ●        |       |               | ●      |
|                    | Health and Safety            |                        | ●     |          | ●        |           | ●            |        | ●     |              |          | ●     | ●             |        |
|                    | Chemical Hazards             |                        | ●     | ●        |          | ●         |              |        | ●     |              | ●        |       | ●             |        |
|                    | Physical Hazards             |                        | ●     | ●        |          |           | ●            |        | ●     |              |          | ●     |               | ●      |
|                    | Security Risks               |                        | ●     |          | ●        |           | ●            |        | ●     |              | ●        |       | ●             |        |

## b) Project Impact Evaluation Matrix

The Project Impact Evaluation Matrix was developed by placing different environmental parameters that are likely to be affected by the proposed project actions, grouped into categories i.e., physical, ecological and socio-economic environment. For the impact assessment risk assessment methodology was used. Moreover, the risk assessment was done on the basis of project phases (planning & designing, construction and operation). A Project Impact Evaluation Matrix is attached as Table below:

**Table 4: Impact Evaluation Matrix**

| Environmental Parameters                                                                                                                      | Impact Assessment during operational Phase |
|-----------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------|
| <b>A: Physical</b>                                                                                                                            |                                            |
| <b>Land Resources</b>                                                                                                                         |                                            |
| Soil Erosion and Contamination                                                                                                                | 0                                          |
| Transportation                                                                                                                                | -1t                                        |
| Solid Waste and By-Products                                                                                                                   | -2p                                        |
| Land Use                                                                                                                                      | NA                                         |
| <b>Air Resources</b>                                                                                                                          |                                            |
| Noise Pollution                                                                                                                               | -1t                                        |
| Air Pollution                                                                                                                                 | -2t                                        |
| Dust Emissions                                                                                                                                | -1t                                        |
| <b>Water Resources</b>                                                                                                                        |                                            |
| Ground Water                                                                                                                                  | -1p                                        |
| Surface Water                                                                                                                                 | NA                                         |
| Wastewater                                                                                                                                    | -2p                                        |
| <b>B : Ecological</b>                                                                                                                         |                                            |
| <b>Flora</b>                                                                                                                                  |                                            |
| Tree Cutting                                                                                                                                  | +1p                                        |
| <b>Fauna</b>                                                                                                                                  |                                            |
| Terrestrial Fauna                                                                                                                             | +1p                                        |
| <b>C: Socio-Economic</b>                                                                                                                      |                                            |
| Employment Opportunities                                                                                                                      | +3p                                        |
| Land Value Appreciation                                                                                                                       | +2t                                        |
| Availability of Local Raw-Material                                                                                                            | +2p                                        |
| Economic Uplift                                                                                                                               | +3p                                        |
| <b>D: Hazards</b>                                                                                                                             |                                            |
| Physical Hazards                                                                                                                              | -1p                                        |
| Chemical Hazards                                                                                                                              | -1p                                        |
| Health and Safety                                                                                                                             | -1p                                        |
| <i>Legends: 1= Low; 2= Medium; 3= High; 4= Extremely High; NA= Not Applicable; t= Temporary; p= Permanent; app= Applicable; 0= Negligible</i> |                                            |

## 4.5 Impacts Associated with Project Location

The proponent has selected the site owing to the following reasons:

- There is no community or human settlement present on-site or in the project as the project site is located in self-developed industrial area.
- There is no fauna or flora belonging to an endangered species present on-site
- The site has accessible through road network i.e., connected to the main road via access roads
- There is no ecologically sensitive or declared protected area like; Reserved Forest, Fish Hatcheries, Wildlife or Game Reserves. Moreover, there is no socio-cultural significant structure (historical or archaeological site or religious structures; Masjid, temples, etc.) It can be concluded in view of these reasons that the selected site is best suited for the project and will not pose any adverse impact or threat on any component of the environment.

#### **4.6 Design Related Impacts**

The negative impacts related to design of the proposed project will not be significant as the area is self-developed industrial having open lands in its proximity / surroundings. The machinery is according to the latest state of art technology. In view of these considerations no environmental problems are foreseen in the context of design. However, the possible impacts of proposed project have been considered and their mitigation measures proposed as under:

#### **4.7 Impacts During Construction Stage**

The potential environmental impacts of the proposed unit along with the mitigation measures during the construction stage of the project have been described as following:

##### **4.7.1 Change in land use**

The proposed project site is a vacant plot and the area where the project is situated, is open and self-developed industrial land, however industrial units are also located in the near vicinity of the project area.

##### **Mitigation**

Proposed project will not impose any major negative impact on the area in view of changes in land use because the proposed site is situated in the premises of working unit as mentioned above.

##### **4.7.2 Impacts on Topography**

The construction of the proposed project will not bring major changes in the existing topography of the project site. The changes due to the construction of the unit will be of localized nature. There will be no significant changes offsite the project area.

##### **Mitigation**

Not required.

##### **4.7.3 Impacts on Soils**

The overall geology and soil quality of the project site is not expected to be adversely impacted due to the execution of the proposed project during the construction period.

### **Mitigation**

Plantation needs to take place at the project site so that soil becomes stabilized.

#### **4.7.4 Impacts on Surface and Ground water**

During the construction stage, the sanitary wastewater will be generated by the worker' camp(s).

### **Mitigation**

At project site, the sanitation system already exists which will provide the safe disposal of wastewater produced from worker's camp.

#### **4.7.5 Impacts on Air Quality**

During construction phase, negligible change will occur in air quality due to the construction machinery used for the development of proposed project.

### **Mitigation.**

No such heavy machinery will be used which has the capacity to change the air quality at project site.

#### **4.7.6 Water Consumption**

During the construction of project, a small quantity of water will be used because project is small. It will not exert any significant effect on water table.

### **Mitigation**

Not required.

#### **4.7.7 Health and Safety of Workers**

The construction activities will impose certain negative impacts on health and safety of the workers.

This impact will be minor because the construction volume is small, however mitigation measures will be required to minimize/eliminate health and safety related negative impacts of the project.

### **Mitigation**

Implementation of the following measures will ensure health and safety of the workers during the construction stage:

- The contractor will ensure that the construction workers / laborers are trained in safety procedures for all relevant aspects of construction:
- Proponent of the Project will make regular checks to ensure that the contractor is following safety working procedures/safety measures.
- Formal emergency procedures will be developed for construction site in case of any accident. First aid kits and other necessary equipment will be kept available at site along with the list of emergency phone numbers to be contacted in case of any accident.

#### **4.7.8 Impacts on flora**

There are no trees or shrubs present at the proposed project site.

### **Mitigation**

Not required.

#### **4.7.9 Impacts on Fauna**

The usual fauna found at the project locality of sparrows, crows, common manias etc. the project will not have any significant impacts on fauna.

#### **Mitigation**

Extensive plantation will be done at open places to enhance the beauty of the locality and project site.

#### **4.7.10 Change of Land Appearance/layout**

There would be no significant change in the land appearance, as minor execution will be involved in construction activities. The excavated earth material will be used for land filling / uplifting the floor level within the project site.

#### **Mitigation**

Not required because the project site is situated in the working unit.

#### **4.7.11 Employment Generation**

During construction stage of the proposed project, about 50+ workers/laborers will be engaged. This will be positive change.

#### **Mitigation**

Not required.

### **4.8 IMPACTS DURING OPERATIONAL STAGE**

The anticipated environmental impacts related to the proposed Project have been studied for the operational stage as discussed below: -

#### **4.8.1 Impacts on Climate**

There will be no negative impacts expected to occur overall on climate of the area during the operational stage of the Project because the production process will be undertaken in the closed chamber machines or vessels. Generators and machinery will be maintained properly and will not impose any negative impacts on climate.

#### **Mitigation**

Not required

#### **4.8.2 Employment Generation**

When the project will be in full operation, it will generate employment for 250-300 persons. This will be a major positive impact.

#### **4.8.3 Air Quality**

During the regular operational stage of the proposed project no emissions will be generated from process however some negligible emissions from stand by generators and machinery will be produced to deal with proper maintenance and hauling will be done and the boiler will be equipped with dry scrubber.

##### **Mitigation**

Schedule of over hauling /maintenance of stand by generator/machinery will be developed.

#### **4.8.4 Noise**

During the operational stage, noise will be generated only from the operation of the stand by generators and in the production hall but to the negligible level. No noisy process will be involved in the proposed project.

##### **Mitigation**

The proper foundation of the stand by generator will be constructed to cope with the problem of tremor / vibration which will consequently abate the noise problem.

- ❖ Sound proof canopy and silencer will also be installed.
- ❖ Schedule of over hauling /maintenance of stand by generator will be developed.
- ❖ Proper set back will be provided from the boundary wall, which will also help to minimize / eliminate the noise pollution.
- ❖ Extensive tree plantation along the boundary wall and at open places will also be done to act as sound barrier / sound absorber.

#### **4.8.4 Water Consumption**

During the operational stage of the proposed project water will be used for washrooms, kitchen and process.

##### **Mitigation**

At open places the grassy lawns will be developed to recharge the water table, which will also help to control the surface runoff during rainy season. Treated wastewater will be sprinkled inside the industry premises on grassy plots.

#### **4.8.5 Wastewater Generation**

During the regular operation of the proposed project wastewater will be produced from different sources as process, kitchen or washrooms, floor washing and process activities etc.

##### **Mitigation**

- ❖ For the treatment of above mentioned, wastewater treatment plant will be installed.
- ❖ The treated wastewater will be sprinkled or used for watering of tree plantation and vegetation within the battery limits of factory.

#### **4.8.6 Solvent Liquid Waste Generation**

While operation of unit spent solvent, as liquid waste will also be generating from decontamination of mixing equipment.

##### **Mitigation**

Reuse spent solvent liquid waste from equipment decontamination as makeup in subsequent formulations.

#### **4.8.7 Solid Waste Generation**

No process solid waste or hazardous waste will be produced. Only plastic drums and packing material will be produced.

##### **Mitigation**

Packaging material and plastic drums are saleable items and will be sold to contractors and record will be maintained.

#### **4.8.8 Health and Safety of Workers**

The workers especially working in the production hall / area may be at health risk. Because they may be some exposure if they will not be properly trained and provide with Personal Protective Equipments (PPEs). This will be major negative impact if not mitigated properly.

##### **Mitigation**

To mitigate the hazards of health and safety of workers the following mitigations measures will be undertaken:

- ❖ No worker aged below 18 years or over 60 years shall be employed for any job involving physical handling of hazardous substances.
- ❖ All workers shall be thoroughly trained in safety precautions for handling hazardous substances and shall be supervised by qualified supervisors.
- ❖ Protective clothing and equipment comprising helmet of cloth cap, safety spectacles or goggles, respirators or masks, rubber or plastic gloves and workboots shall be available for all workers who may be exposed to any hazardous substances, and no worker shall be permitted on job unless and until he is wearing such protective clothing and equipment.
- ❖ To avoid any kind of potential environmental hazards the worker would be trained properly so that they know the potential hazard of chemical.
- ❖ Proper cross ventilation shall be under taken to avoid from any bad smell/odor.
- ❖ There will be proper arrangement to handle accidental / disastrous situation.
- ❖ The instructions for the workers, safety signs and precautionary / preventive measures for the costumers / visitors would be displayed at the suitable / prominent places.

- ❖ Adequate supply of water shall be made available to the workers for their personal washing as well as for washing their protective equipment's.
- ❖ Protective clothing and equipment's of the workers shall be washed and cleaned as often as required to ensure their efficiency.
- ❖ No worker shall be permitted to eat, drink or smoke till he has removed his protective clothing and equipment, washed his hands and face and left the place of work.
- ❖ All firefighting, emergency and safety equipment's shall be frequently checked and properly maintained.
- ❖ First aid medical facilities equipped with required antidotes shall be available in the premises, supervised by trained staff.
- ❖ Medical checkup of all workers shall be carried out at the time of employment and at least once a year thereafter.

#### **4.8.9 Emergency Response**

The operation of the proposed unit will handle workers and visitors who may become ill or have work related accidents. In addition, disasters such as earthquakes and fires may occur which have to be considered for minimizing their impacts.

#### **Mitigation**

- ❖ An Emergency Response Plan for earthquakes and manmade disasters will be prepared by the project management.
- ❖ Adequate supply of water shall be made available to the worker for personal washing as well as for washing their protective equipment's.
- ❖ All firefighting, emergency and Safety equipment's shall be frequently checked and properly maintained.
- ❖ Proper size and types of portable fire extinguishers will be kept near areas where flammable liquids are handled or stored.
- ❖ Adequate fire suppression system will be installed and properly functioning.
- ❖ The aesthetic conditions / outlook of the unit should be improved by tree plantation / ornamental plants and proper physical infrastructure.
- ❖ Proper disastrous and firefighting arrangements (fire extinguisher, fire hydrants, kits, instruments etc.) shall be ensured at many places of both sites.
- ❖ The internationally recognized health and safety standards will be adopted and the Emergency Response Plan will be developed and implemented in close consultation with the Fire Fighting Department.

## **4.9 POTENTIAL ENVIRONMENTAL ENHANCEMENT MEASURES**

### **4.9.1 Tree Plantation**

Tree plantation within and outside the premises is a potential environmental enhancement measure. A large area will be reserved for tree plantation and among plants native flora like Peepal, Kikar, Dherak, Safeeda and Amaltas will be planted in the specified green zone which will have the maximum capacity to reduce noise pollution and tolerance index of these species are more than 10. Some floral species like roses and other ornamental evergreen plants will also be introduced in the lawn which will enhance aesthetic beauty. In addition, trees like Safeeda and Amaltas will be planted as boundary wall inside the lawn which will look like green wall. The proponent will also make arrangements for protection and maintenance of trees.

### **4.9.2 Facility Design**

The introduction of an ecologically effective and efficient design of a facility is the environmental enhancement measures planned by the proponent to be incorporated into the design of the intended project.

### **4.9.3 Social Enhancement Measures**

Following measures will be adopted to improve the socio-economic condition of the area:

#### **a. Employment/Poverty Alleviation**

The employment opportunities in the project area will be increased due to the establishment of proposed project at the aforesaid location. During establishment of the aforesaid facility un-skilled workers will be required as labors, sanitary workers and sweepers as well as for the skilled workers such as; accounts and managers to run the administration office local community will be considered on the priority basis. In totality, the overall economic conditions of the area will be improved due to the establishment of the aforesaid project.

#### **b. Local Economy**

The employment opportunities and/or income sources generated by the project construction and operation will be long term in nature. These will be enhanced once the construction phase is completed. The local economy will experience a slight boom during development and operational period.

## **5. ENVIRONMENTAL MANAGEMENT AND MONITORING PROGRAM**

This chapter summarizes the various mitigation measures as outlined previously in this EIA Report that will be implemented during the construction, operational and decommissioning stages of project. It does not discuss further the mitigation measures which have been adopted within the design and planning of the project, as these are comprehensively covered in previous section of this EIA Report.

Outline and key features of the EMMP for operations phase is presented. As per the environmental legislation in Pakistan, the EMMP for the operations phase, along with other documents, is to be submitted to the environmental protection agency to obtain confirmation for compliance and Environmental Approval for project operation. Even after implementation of the suggested mitigation measures, the impact may remain significant, and require monitoring.

### **5.1 Objectives**

An Environmental Monitoring Plan was outlined alongside Environmental Management Plan to ensure all the corrective actions to counter adverse impacts which gives a detailed EMMP. The EMMP will serve as a principal execution module of the project that would not only mitigate adverse environmental impacts during the construction and the operational phase of the project but also ensures that environmental standards and good in-housekeeping are being practiced. Continuous environmental monitoring is exercised to ensure that preventive measures are in place and effective to sustain environmental integrity.

The key objectives of EMMP are:

- ⊙ To outline functions and responsibilities of persons
- ⊙ To state and implement standards and guidelines which are required under environmental legislations particular in context to the Project
- ⊙ To facilitate the implementation of the mitigation measures by providing the technical details of each Project's impact and proposing implementation schedule of the proposed mitigation measures
- ⊙ Define a monitoring mechanism and identify monitoring parameters to ensure that all proposed mitigation measures are completely and effectively implemented
- ⊙ Identify the resources required to implement the EMMP and outline corresponding financing arrangements

### **5.2 Management Approach**

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

#### **5.2.1 Proponent**

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

### **5.2.2 Contractors**

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

### **5.3 Components of EMMP**

The EMMP consists of the following:

- ⊙ Institutional arrangements
- ⊙ Mitigation plan to reduce the severity of associated impacts
- ⊙ Monitoring plan to monitor the impacts and their severity
- ⊙ Environmental and social trainings to raise awareness

#### **5.3.1 Remedial and Mitigation Measures**

The objective of remedial and mitigation measures in any project is to identify practices, technologies or activities that would prevent, minimize or mitigate all significant negativities that are likely to occur due to the proposed project.

### **5.4 Environmental Management and Monitoring Framework**

The purpose of the environmental management and monitoring framework is to facilitate the implementation of environmental commitments, included in the environmental impact assessment. The proponent is committed for the protection of the environment and to the sustainable management of its related operations and activities.

**Table 5: Environmental Management Plan**

| <b>Sr. No.</b>                              | <b>Project Component or Impact</b>  | <b>Target</b>                                                       | <b>Action</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | <b>Responsibility</b>          |
|---------------------------------------------|-------------------------------------|---------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------|
| <b>A- Pre-Construction / Design Related</b> |                                     |                                                                     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |                                |
| 1                                           | Seismic Hazard Analysis             | To project the building structure from seismic hazard               | <ul style="list-style-type: none"> <li>The building will be designed to withstand moderate to large earthquakes</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                          | Proponent / Design Consultants |
| 2                                           | Emergency Response                  | To mitigate the emergency condition                                 | <p>The following mitigation measure will be adopted to minimize or eliminate the emergency situations:</p> <ul style="list-style-type: none"> <li>The design of building will also include emergency exists which can be used during emergency situation.</li> <li>Adequate internal and external water distribution system will be designed, which could also supply adequate quantity of water for firefighting during emergency.</li> <li>Fire hydrants and firefighting extinguishers will be provided at locations where necessary.</li> </ul> | Proponent / Design Consultants |
| <b>B- Construction Stage</b>                |                                     |                                                                     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |                                |
| 1                                           | Impacts on soil                     | To ensure the minimum changes in soil                               | <ul style="list-style-type: none"> <li>Plantation needs to take place at the project site so that soil becomes stabilized</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                | Contractor / Proponent         |
| 2                                           | Impacts on surface and ground water | To mitigate the problem of contamination of surface and groundwater | <ul style="list-style-type: none"> <li>At project site, the, sanitation system will be provided for the safe disposal of wastewater produced from workers camp.</li> </ul>                                                                                                                                                                                                                                                                                                                                                                          | Contractor / Proponent         |

|   |                                         |                                                       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |                                |
|---|-----------------------------------------|-------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------|
| 3 | Health and Safety of workers and public | To ensure health and safety of workers and public     | <p>Implementation of the following measures will ensure health and safety of the workers during the construction stage:</p> <ul style="list-style-type: none"> <li>• The Contractor will ensure that the construction workers / laborers are trained in safety procedures for all relevant aspects of construction;</li> <li>• Proponents of the Project will make regular checks to ensure that the contractor is following safety working procedures / safety measures.</li> <li>• Formal emergency procedures will be developed for construction site in case of an accident. First aid kits and other necessary equipment will be kept available at site along with the list of emergency phone numbers to be contracted in case of any accident.</li> <li>• The safety of the public at all stages of the construction will be ensured through appropriate public education and safety measures such as use of sign boards, barriers and flags and proper illumination at night.</li> </ul> | Contractor / Proponent         |
| 4 | Fauna                                   | To ensure that fauna may be affected at minimum level | <ul style="list-style-type: none"> <li>• Extensive plantation will be done at open places to enhance the beauty of the locality and project site. This will also help to protect fauna, particularly birds.</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | Factory Management / Proponent |
| 5 | Disposal of Mucking Material            | To avoid the degradation of soil                      | <ul style="list-style-type: none"> <li>• The spoil will be carefully examined and disposed off in an environmental friendly manner by transporting it in closed containers and filling at appropriate sites.</li> <li>• It is also desirable to utilize the muck in such a way that it is consumed for the construction of any other structure within the Project Site or in the immediate vicinity.</li> <li>• Utilization of much in the vicinity of the Project Site is considered as the best option for its disposal.</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                            | Contractor / Proponent         |

### C- Operational Stage

|   |                                 |                                          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |                                |
|---|---------------------------------|------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------|
| 1 | Air Quality                     | To avoid the degradation of air quality  | In order to minimize air pollution, following mitigation measures are recommended: <ul style="list-style-type: none"> <li>Schedule of over hauling/maintenance of stand by generator will be developed.</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                            | Factory Management / Proponent |
| 3 | Noise                           | To mitigate the Noise problem            | <ul style="list-style-type: none"> <li>The proper foundation of the stand by generator will be constructed to cope with the problem of tremor / vibration which will consequently abate the noise problem.</li> <li>Sound proof canopy and silencer will also be installed.</li> <li>Schedule of over hauling / maintenance of stand by generator will be developed.</li> <li>Proper set back will be provided from the boundary wall, which will also help to minimize / eliminate the noise pollution.</li> <li>Extensive tree plantation along the boundary wall and at open places will also be done to act as sound barrier / sound absorber.</li> </ul> | Factory Management / Proponent |
| 4 | Water Consumption               | To mitigate this problem                 | <ul style="list-style-type: none"> <li>At open places the grassy lawns will be developed to recharge the water table, which will also help to control the surface runoff during rainy season.</li> <li>Treated wastewater will be sprinkled inside the mill premises on grassy plots. However, the area is self-developed industrial in nature, so the maximum rainwater will recharge the water table.</li> </ul>                                                                                                                                                                                                                                            | Factory Management / Proponent |
| 5 | Solvent Liquid Waste Generation | To proper reuse the liquid solvent waste | <ul style="list-style-type: none"> <li>Reuse spent solvent liquid waste from equipment decontamination as makeup in subsequent formulations.</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | Factory Management / Proponent |
| 6 | Wastewater Generation           | To mitigate the problem                  | <ul style="list-style-type: none"> <li>For the treatment of above mentioned wastewater treatment plant will be installed.</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | Factory Management / Proponent |

|   |                            |                                                            |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |                                |
|---|----------------------------|------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------|
|   |                            |                                                            | <ul style="list-style-type: none"> <li>The treated wastewater will be sprinkled or used for watering of tree plantation and vegetation within the battery limits of factory.</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |                                |
| 7 | Solid Waste Generation     | To establish a proper management plan for this solid waste | <ul style="list-style-type: none"> <li>No process solid waste or hazardous waste will be produced.</li> <li>The dispensary waste will be incinerated through Shalimar Hospital incinerator.</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | Factory Management / Proponent |
| 8 | Health & Safety of Workers | To provide necessary health & safety facilities            | <p>To mitigate the hazards of health and safety of workers the following mitigations measures will be undertaken:</p> <ul style="list-style-type: none"> <li>No worker aged below 18 years or over 60 years shall be employed for any job involving physical handling of hazardous substances.</li> <li>All workers shall be thoroughly trained in safety precautions for handling hazardous substances and shall be supervised by qualified supervisors.</li> <li>Protective clothing and equipment comprising helmet of cloth cap, safety spectacles or goggles, respirators or masks, rubber or plastic gloves and workboots shall be available for all workers who may be exposed to any hazardous substance, and no worker shall be permitted on job unless and until he is wearing such protective clothing and equipment.</li> <li>To avoid any potential environmental hazards the workers would be trained properly so that they know the potential hazard of chemical.</li> <li>Proper cross ventilation shall be undertaken to avoid from any bad smell/odor.</li> <li>There will be proper arrangement to handle accidental / disastrous situation.</li> </ul> | Factory Management / Proponent |

|   |                    |                                                 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |                                |
|---|--------------------|-------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------|
|   |                    |                                                 | <ul style="list-style-type: none"> <li>• The instructions for the workers, safety signs and precautionary / preventive measures for the costumers / visitors would be displayed at suitable / prominent places.</li> <li>• Adequate supply of water shall be made available to the workers for personal washing as well as for washing their protective equipment's.</li> <li>• Protective clothing and equipment of the workers shall be washed and cleaned as often as required to ensure their efficiency.</li> <li>• No worker shall be permitted to eat, drink or smoke till he has removed his protective clothing and equipment, washed his hands and face and left the place of work.</li> <li>• All firefighting, emergency and safety equipment's shall be frequently checked and properly maintained.</li> <li>• First aid medical facility equipped with required antidotes shall be available in the premises, supervised by trained staff.</li> <li>• Medical check-up of all workers shall be carried out at the time of employment and at least once a year thereafter.</li> </ul> |                                |
| 9 | Emergency Response | To mitigate the problem of emergency situations | <ul style="list-style-type: none"> <li>• An Emergency Response Plan for earthquakes and man-made disasters will be prepared by the project management.</li> <li>• Adequate supply of water shall be made available to the workers for personal washing as well as for washing their protective equipment's.</li> <li>• All firefighting, emergency and safety equipment's shall be frequently checked and properly maintained.</li> <li>• Proper size and types of portable fire extinguishers will be kept near areas where flammable liquids are handled or stored.</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | Factory Management / Proponent |

- |  |  |  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |  |
|--|--|--|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|
|  |  |  | <ul style="list-style-type: none"><li>• Adequate fire suppression system will be installed and properly functioning.</li><li>• The aesthetic conditions / outlook of the unit should be improved by tree plantation / ornamental plants and proper physical infrastructure.</li><li>• Proper disastrous and fire fighting arrangements (fire extinguishers, fire hydrants, kits, instruments etc.) shall be ensured at many places of both sites.</li><li>• The internationally recognized health and safety standards will be adopted and the Emergency Response Plan will be developed and implemented in close consultation with the Fire Fighting Department, Paramedics and Civil Defense.</li></ul> |  |
|--|--|--|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|

#### 5.4.1 Institutional Arrangements and Responsibilities

The proposed institutional arrangement for the implementation of EMMP is based on the discussions held with the Forest Department, Environmental Protection Department, Local Union Council Office and Proponent. The discussion concluded that three types of institutional arrangements are essential for the effective implementation of EMMP, these are follows:

- ⊙ Establishment of Environment/Social Management Group
- ⊙ External Monitoring by EPA certified laboratory
- ⊙ EMC established by Proponent after consultation with consultant

##### a) Roles and Responsibilities

Following are the designated roles and responsibilities of the employees involved in the monitoring and management of the adverse impacts:

**Table 6: Roles and Responsibilities**

| Roles and Responsibilities |                     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
|----------------------------|---------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Sr#                        | Concerned Persons   | Duties                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
| 1                          | The Project Manager | <p>Following will be the responsibilities of the Project Manager</p> <ul style="list-style-type: none"> <li>• Ensure that the contractor is aware of all specifications, legal constraints, standards and procedures pertaining to the project specifically with regards to environment.</li> <li>• Ensure that all stipulations within the EMMP are communicated and adhered to by contractor(s)</li> <li>• Monitor the implementation of the EMMP throughout the project by means of site inspections and meetings. This will be documented as part of the minutes of the site meeting documents</li> <li>• Ensuring project execution within defined budget and timelines</li> <li>• Conducting regular check of the project status and meetings with project team</li> <li>• Provide support and guidance to project team as and when needed</li> <li>• Project Manager is expected to continually monitor and improve the overall performance of their operation</li> </ul> |
| 4                          | HSE Manager         | <p>In addition to the health and safety responsibilities held by staff, managers and supervisors must do whatever is reasonably practical to ensure that both the workplace and the work itself are safe. This includes:</p> <ul style="list-style-type: none"> <li>• Ensuring that staff are appropriately trained and supervised</li> <li>• Identifying, assessing and managing health and safety risks</li> <li>• Consulting with workers (including staff, affiliates and contractors): <ul style="list-style-type: none"> <li>i. Health and safety risk assessments</li> <li>ii. Decisions are made about the measures to be taken to eliminate or control these risks</li> <li>iii. Health and safety risk assessments</li> </ul> </li> </ul>                                                                                                                                                                                                                              |

|  |  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
|--|--|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|  |  | <ul style="list-style-type: none"> <li>• Implementing health and safety risk management programs relevant to their operations, teaching, research and consulting functions and work environment</li> <li>• Reporting (to the Human Resources Unit), investigating and responding to all hazards, accidents, incidents and taking action to control the risk</li> <li>• Assisting with the development, implementation and maintenance of a return to work program for injured staff.</li> <li>• Be fully conversant with the EIA and conditions of its approval</li> <li>• Be fully conversant with the EMMP</li> <li>• Be fully conversant with all relevant environmental legislation, policies and procedures, and ensure compliance</li> <li>• Convey the contents of this document to the contractor site staff and discuss the contents in detail with the Project Manager and Contractor</li> <li>• Undertake regular and comprehensive inspection of the site and surrounding areas in order to monitor compliance with the EMMP</li> <li>• Take appropriate action if the specifications contained in the EMMP are not followed</li> <li>• Monitor and verify that environmental impacts are kept to a minimum, as far as possible</li> <li>• Review and approve construction methods, with input from the Site Manager, where necessary</li> <li>• Ensure that activities on site comply with all relevant environmental legislation</li> <li>• Compile progress reports on regular basis, with input from the Site Manager, for submission to the Project Manager, including a final post excavation audit</li> <li>• Liaise with the Site Manager regarding the monitoring of the site</li> <li>• Report any non-compliance or remedial measures that need to be applied</li> <li>• All environmental problems arising on the construction area will be reported to the Site Manager by the Environmental Manager. Reports on such problems will be submitted to the Project Manager by the Site Manager</li> </ul> |
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#### **5.4.2 Proposed Monitoring Program to Assess Performance or Output of EMP**

The following environmental issues are considered to warrant specific management actions for the implementation of project. These issues have specific regulatory requirements (contained in the development consent or Environmental Approval) and/or are considered to have the potential to result in a non-compliance with a legislative requirement or generate community complaints. To manage the adverse environmental impacts on the physical parameters of the environment following management and monitoring plans will be adopted:

Table 7: Environmental Monitoring Plan

| Aspect                                | Potential Impacts/ Risks                                                                                                                | Likely Duration | Magnitude if not Mitigated | Proposed Mitigation Measures                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | Responsibility                | Environmental Budget |
|---------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------|-----------------|----------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------|----------------------|
| <b>A – Pre-Construction / Related</b> |                                                                                                                                         |                 |                            |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                               |                      |
| Changes in land use                   | Economic gains                                                                                                                          | Permanent       | Minor positive             | -                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | -                             |                      |
| Seismic Hazard                        | Damage due to earthquake                                                                                                                | Permanent       | Moderate negative          | <ul style="list-style-type: none"> <li>The structure of the proposed project has been designed in such a way that building may withstand moderate to large earthquakes.</li> </ul>                                                                                                                                                                                                                                                                                                                                                             | Design Consultant / Proponent |                      |
| Emergency Response                    | There are always changes of earthquakes and other manmade disasters such as fires due to electrical short circuiting, over heating etc. | Permanent       | Minor negative             | <p>The following mitigation measures will be adopted to minimize or eliminate the emergency situations:</p> <ul style="list-style-type: none"> <li>The design of building will include emergency exits, which can be used during emergency situation.</li> <li>Adequate internal and external water distribution system will be designed, which could also supply adequate quantity of water for firefighting during emergency.</li> <li>Fire hydrants and firefighting extinguishers will be provided at locations where necessary</li> </ul> | Design Consultant / Proponent | 50,000/-             |

| <b>B – Construction Stage</b>     |                                                                                                                                                                                                                                                                    |                        |                                   |                                                                                                                                                                                                                                                                                                                      |                         |                             |
|-----------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------|-----------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------|-----------------------------|
| <b>Aspect</b>                     | <b>Potential Impacts/ Risks</b>                                                                                                                                                                                                                                    | <b>Likely Duration</b> | <b>Magnitude if not Mitigated</b> | <b>Proposed Mitigation Measures</b>                                                                                                                                                                                                                                                                                  | <b>Responsibility</b>   | <b>Environmental Budget</b> |
| Topography                        | The construction of the proposed project will not bring major changes in the existing topography of the project site. The changes due to the construction of the unit will be of localized nature. There will be no significant changes off-site the project area. | -                      | -                                 | -                                                                                                                                                                                                                                                                                                                    | -                       |                             |
| Impact on Soils                   | The overall geology and soil quality of the project site is not expected to be adversely impacted due to the execution of the proposed project during the construction period.                                                                                     | Temporary              | Minor negative                    | <ul style="list-style-type: none"> <li>Plantation needs to take place at the project site so that soil becomes stabilized.</li> </ul>                                                                                                                                                                                | Contractors / Proponent | 25,000/-                    |
| Impact on surface and groundwater | During the construction stage, the sanitary wastewater will be generated by the workers' camp(s).                                                                                                                                                                  | Temporary              | Moderate negative                 | <ul style="list-style-type: none"> <li>At project site, the sanitation system already exists which will provide the safe disposal of wastewater produced from workers camp.</li> <li>The storage of lubricant materials such as oil and grease will be confined to a specific area so that in case of any</li> </ul> | Contractors / Proponent | 50,000/-                    |

|                                         |                                                                                                                                                            |           |                   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |                        |          |
|-----------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------|-------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------|----------|
|                                         |                                                                                                                                                            |           |                   | leakage or spillage, the lubricant materials do not contaminate the entire project site.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |                        |          |
| Air Quality                             | During the construction phase, negligible change will occur in air quality due to the construction machinery used for the development of proposed project. | Temporary | Minor negative    | No such heavy machinery will be used, which has capacity to change the air quality radically at project site                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | Contractor / Proponent | 50,000/- |
| Health and safety of workers and public | The construction activities impose certain negative impacts on health and safety of the workers and public                                                 | Temporary | Moderate negative | <p>Implementation of the following measures will ensure health and safety of the workers during the construction stage:</p> <ul style="list-style-type: none"> <li>the construction workers / laborers are trained in safety procedures for all relevant aspects of construction;</li> <li>Proponents of the project will make regular checks to ensure that the contractor is following safety working procedures/safety measure.</li> <li>Formal emergency procedures will be developed for construction site in case of an accident. First aid kits and other necessary equipment will be kept available at site along</li> <li>The contractor will ensure that</li> <li>With the list of emergency phone numbers to be contracted in case of any accident.</li> </ul> | Contractor / Proponent | 30,000/- |

|                              |                                                                                                                                                                                                                                                        |           |                   |                                                                                                                                                                                                                      |                        |          |
|------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------|-------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------|----------|
| Water Consumption            | During the construction of project, the small quantity of water will be used because project is small and building is double story. It will not exert any significant effect on water table.                                                           | -         | -                 | -                                                                                                                                                                                                                    | -                      |          |
| Flora                        | There are no trees or shrubs present at the project site.                                                                                                                                                                                              | -         | -                 | -                                                                                                                                                                                                                    | -                      |          |
| Fauna                        | The usual fauna found in the project area is sparrows, crows, common manias etc. the project will be having any significant impact on fauna.                                                                                                           | Permanent | Minor negative    | <ul style="list-style-type: none"> <li>Extensive plantation will be done at open places to protect birds and to enhance the beauty of the locality and project site.</li> </ul>                                      | Proponent              | 25,000/- |
| Disposal of Mucking Material | Inevitable cut and fill earthwork operations will open up scars on the land in and around the project site. The Excavated materials that are unsuitable for use need to be stored, transported and disposed off appropriately at the designated sites. | Temporary | Moderate negative | <ul style="list-style-type: none"> <li>The spoil will be carefully examined and disposed off in an environmental friendly manner by transporting it in closed containers and filling at appropriate sites</li> </ul> | Contractor / Proponent | 10,000/- |
| Employment Generation        | During construction stage of the proposed project about 55 workers / laborers will be engaged. This will be minor positive change.                                                                                                                     | -         | -                 | -                                                                                                                                                                                                                    | -                      |          |

| C- Operational Stage  |                                                                                                                                                                                                                                                                                                                                                                         |                 |                            |                              |                                                  |  |
|-----------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------|----------------------------|------------------------------|--------------------------------------------------|--|
| Aspect                | Potential Impacts/ Risks                                                                                                                                                                                                                                                                                                                                                | Likely Duration | Magnitude if not Mitigated | Proposed Mitigation Measures | Responsibility                                   |  |
| Impact on climate     | There will be no negative impacts expected to occur overall on climate of the area during the operational stage of the project because the production process will be undertaken in the closed chamber machines. Generators will be kept in closed room and cyclone will be installed to control the emissions hence it will not impose any negative impact on climate. | -               | -                          | -                            | -                                                |  |
| Employment Generation | When the project will be in full operation, it will generate employment for 285 persons. This will be a major positive impact.                                                                                                                                                                                                                                          | Permanent       | Major Positive             | -                            | -                                                |  |
| Air Quality           | During the regular operational stage of the proposed project no emissions will be generated from process however some                                                                                                                                                                                                                                                   | Permanent       | Moderate negative          | •                            | Schedule of over hauling/maintenance of stand by |  |

|                                |                                                                                                                                                                                      |           |                   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |                                |          |
|--------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------|-------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------|----------|
|                                | negligible emissions from stand by generators will be produced which will be within the PEQS because green fuel Natural gas will be used.                                            |           |                   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | generator will be developed.   | 70,000/- |
| Vapor/Fumes in Production Hall | While product of the anti-biotic products some negligible fumes may be produced in the production hall. However, all the process will be undertaken in the closed chamber machinery. | Permanent | Negative          | <ul style="list-style-type: none"> <li>Cyclone will be installed in the production hall if needed.</li> <li>These vapors or fugitive emissions will be captured into wet cotton filters.</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                    | Factory Management / Proponent | 25,000/- |
| Noise                          | During the operational stage, noise will be generated only from the operation of the stand by generator. No noisy process will be involved in the proposed project.                  | Permanent | Moderate negative | <ul style="list-style-type: none"> <li>The proper foundation of the stand by generator will be constructed to cope with the problem of tremor / vibration which will consequently abate the noise problem.</li> <li>Sound proof canopy and silencer will also be installed.</li> <li>Schedule of over hauling/maintenance of stand by generator will be developed.</li> <li>Proper set back will be provided from the boundary wall, which will also help to minimize / eliminate the noise pollution.</li> <li>Extensive tree plantation along the boundary wall and at open places will be done to act as sound barrier / sound absorber.</li> </ul> | Factory Management / Proponent | 25,000/- |

|                       |                                                                                                                                                                   |           |                |                                                                                                                                                                                                                                                                                                                                                                                                                                          |                                                                                                                                                        |          |
|-----------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------|----------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------|----------|
| Water Consumption     | During the operational stage of the proposed project about water will be used for washrooms, kitchen and process.                                                 | Permanent | Negative       | •                                                                                                                                                                                                                                                                                                                                                                                                                                        | At open places the grassy lawns will be developed to recharge the water table, which will also help to control the surface runoff during rainy season. |          |
| Wastewater Generation | During the regular operation of the proposed project about wastewater will be produced from different sources as process, kitchen or washrooms, floor washing etc | Permanent | Major negative | <p>The following mitigation measures will be adopted:</p> <ul style="list-style-type: none"> <li>• For the treatment of the above-mentioned wastewater treatment plant will be installed.</li> <li>• The treated wastewater will be sprinkled or used for watering of tree plantation and vegetation within the battery limits of factory.</li> <li>• The surplus treated wastewater will be drained out into the main Drain.</li> </ul> | Factory management / Proponent                                                                                                                         | 70,000/- |

|                                 |                                                                                                                                                                                                                                                                                          |           |                   |                                                                                                                                                                                                                                                                                                                                                                                                                      |                                |          |
|---------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------|-------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------|----------|
| Solvent Liquid Waste Generation | <ul style="list-style-type: none"> <li>While operation of the unit spent solvent</li> <li>As liquid waste will also be generating from decontamination of mixing equipment.</li> </ul>                                                                                                   | Permanent | Major negative    | <ul style="list-style-type: none"> <li>Reuse spent solvent liquid waste from equipment</li> <li>Decontamination as makeup in subsequent formulations.</li> </ul>                                                                                                                                                                                                                                                     | Factory Management /Proponent  | 20,000/- |
| Solid Waste Generation          | <p>No process solid waste or hazardous waste is will be produced.</p> <p>Only plastic drums and packaging material will be produced. The dispensary waste will be incinerated thought Shalimar Hospital incinerator.</p>                                                                 | Permanent | Moderate negative | No process solid waste or hazardous waste will be produced from proposed unit.                                                                                                                                                                                                                                                                                                                                       | Factory Management / Proponent | 30,000/- |
| Health & Safety of Workers      | <p>The workers especially working in the production hall / area may be at health risk. Because they may be some exposure if they will not be properly trained and provide with Personal Protective Equipment's (PPEs). This will be major negative impact if not mitigated properly.</p> | Permanent | Major Negative    | <p>To mitigate the hazards of health and safety of workers the following mitigations measures will be undertaken:</p> <p>No worker aged below 18 years or over 60 years shall be employed for any job involving physical handling of hazardous substances.</p> <ul style="list-style-type: none"> <li>All workers shall be thoroughly trained in safety precautions for handling hazardous substances and</li> </ul> |                                | 50,000/- |

|  |  |  |  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |  |  |
|--|--|--|--|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|--|
|  |  |  |  | <p>shall be supervised by qualified supervisors.</p> <ul style="list-style-type: none"> <li>• Projective clothing and equipment comprising helmet of the cloth cap, safety spectacles or goggles, respirators or masks, rubber or plastic gloves and Workboots shall be available for all workers who may be exposed to any hazardous substance, and no worker shall be permitted on job unless and until he is wearing such protective clothing and equipment.</li> <li>• To avoid any potential environmental hazards the workers would be trained properly so that they know potential hazard of chemical.</li> <li>• Proper cross ventilation shall be undertaken to avoid from any bad smell / odor.</li> <li>• First aid medical facility equipped with required antidotes shall be available in the premises, supervised by trained staff.</li> <li>• Medical check-up of all workers shall be carried out at the time of employment and at least once a year</li> </ul> |  |  |
|--|--|--|--|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|--|

|                    |                                                                                                                                                                                                                                                  |           |                |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |                                |          |
|--------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------|----------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------|----------|
|                    |                                                                                                                                                                                                                                                  |           |                | thereafter.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |                                |          |
| Emergency Response | The operation of the proposed unit will involve workers and visitors who may become ill or have work related accidents. In addition, disasters such as earthquakes and fires may occur which have to be considered for minimizing their impacts. | Permanent | Major negative | <ul style="list-style-type: none"> <li>An Emergency Response Plan for earthquakes and manmade disasters will be prepared by the project Management.</li> <li>Adequate supply of water shall be made available to the workers for personal washing as well as for washing their projective equipment's.</li> <li>All firefighting, emergency and safety equipment's shall be frequently checked and properly maintained. Proper size and types of portable fire extinguishers will be kept near areas where flammable liquids are handled or stored.</li> <li>Adequate fire suppression system will be installed and properly functioning.</li> <li>The aesthetic conditions / outlook of the unit should be improved by tree plantation / ornamental plants and proper physical infrastructure.</li> <li>Proper disastrous and firefighting arrangements (fire extinguishers, fire hydrants, kits, entrustments etc.) shall</li> </ul> | Factory Management / Proponent | 30,000/- |

|  |  |  |  |                                                                                                                                                                                                                                                                                                                                       |  |  |
|--|--|--|--|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|--|
|  |  |  |  | <p>be ensured at many places of both sites.</p> <ul style="list-style-type: none"> <li>The internationally recognized health and safety standards will be adopted and the Emergency Response Plan will be developed and implemented in close consultation with the Fire Fighting Department, Paramedics and Civil Defense.</li> </ul> |  |  |
|--|--|--|--|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|--|

## 5.5 Proposed EMP Reporting and Reviewing Procedures

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

### 5.5.1 Meetings

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

### 5.5.2 Changes-Record Register

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

## 5.6 Impacts and their Mitigation Summary

Environmental and social impacts have been identified for the process of Ahmad Amin Textile Industries; their impacts had been mitigation by adopting required measures as recommended in EMMP of this EIA Report within the Project Area of Influence. The major impacts on physical, biological and social environment are described as under:

**Table 8: Impacts Summary of Ahmad Amin Textile Industries Processing**

| Environmental Parameters       | Impact Assessment during operational Phase |
|--------------------------------|--------------------------------------------|
|                                | Operational                                |
| <b>A: Physical</b>             |                                            |
| <b>Land Resources</b>          |                                            |
| Soil Erosion and Contamination | 0                                          |
| Transportation                 | -1t                                        |
| Solid Waste and By-Products    | -2p                                        |
| Land Use                       | NA                                         |
| <b>Air Resources</b>           |                                            |
| Noise Pollution                | -1t                                        |
| Air Pollution                  | -1t                                        |
| Dust Emissions                 | -1t                                        |
| <b>Water Resources</b>         |                                            |
| Ground Water                   | -1p                                        |
| Surface Water                  | NA                                         |
| Wastewater                     | -2p                                        |
| <b>B : Ecological</b>          |                                            |
| <b>Flora</b>                   |                                            |
| Tree Cutting                   | +1p                                        |
| <b>Fauna</b>                   |                                            |
| Terrestrial Fauna              | +1p                                        |
| <b>C: Socio-Economic</b>       |                                            |
| Employment Opportunities       | +3p                                        |

|                                                                                                                                               |     |
|-----------------------------------------------------------------------------------------------------------------------------------------------|-----|
| Land Value Appreciation                                                                                                                       | +2t |
| Availability of Local Raw-Material                                                                                                            | +2p |
| Economic Uplift                                                                                                                               | +3p |
| <b>D: Hazards</b>                                                                                                                             |     |
| Physical Hazards                                                                                                                              | -1p |
| Chemical Hazards                                                                                                                              | -1p |
| Health and Safety                                                                                                                             | -1p |
| <i>Legends: 1= Low; 2= Medium; 3= High; 4= Extremely High; NA= Not Applicable; t= Temporary; p= Permanent; app= Applicable; 0= Negligible</i> |     |

## 5.7 Equipment Maintenance Details

The Client and Contractor will be responsible to maintain equipment with higher efficiency and in good working conditions. The equipment will be maintained twice a year as well as monthly inspection will be done on the regular basis to keep the process going without any interruption.

## 5.8 Environmental Budget

The environmental budget for the project is PKR 5 lacs which will be used for the control of the air pollution by the installation of dust collection system, tree plantation at various designated sites, EMMP for the operational phase and monitoring of environmental parameters (such as ambient air, noise and wastewater). The total cost of the project is PKR 138 million. EMMP and the monitoring will be carried out on the regular basis. So, more than 1% of the total project cost will be allocated for the environmental protection.

## 5.9 Training and Capacity Building

Training and capacity building trainings are conducted on the regular basis to enhance the capacity of the workers hired for the working. Following is the detailed plan along with the schedules of the training:

**Table 9: Training and Capacity Building Plan**

| Potential Impacts (Operation Phase)             | Mitigation / Training Focus                                                        | Management Plan                                                                                     | Monitoring Indicators                  | Responsibility                   | Environmental Budget | Monitoring Duration |
|-------------------------------------------------|------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------|----------------------------------------|----------------------------------|----------------------|---------------------|
| Noise from machinery, HVAC and vehicle movement | Training on equipment operation, preventive maintenance and noise control measures | Conduct awareness on use of acoustic enclosures, scheduled operation, and use of hearing protection | Noise levels within NEQS, use of PPE   | HSE Manager / Production Manager | 20,000/-             | 1 day annually      |
| Improper handling of                            | Training on segregation of hazardous, non-                                         | Implementation of waste management                                                                  | Waste inventory and disposal manifests | HSE Officer / QA Manager         | 25,000/-             | Twice a year        |

|                                              |                                                                    |                                                                           |                            |                            |          |              |
|----------------------------------------------|--------------------------------------------------------------------|---------------------------------------------------------------------------|----------------------------|----------------------------|----------|--------------|
| <b>steel solid waste</b>                     | hazardous and expired medicines                                    | SOPs, color coded bins, record keeping                                    |                            |                            |          |              |
| <b>Contamination from process wastewater</b> | Training on ETP operation, chemical dosing and monitoring          | Capacity building of operators on wastewater sampling and NEQS compliance | pH, BOD, COD within limits | ETP Operator / HSE Manager | 25,000/- | Quarterly    |
| <b>Chemical exposure to workers</b>          | Training on safe handling of APIs, solvents and MSDS understanding | Use of PPE, spill response and first aid procedures                       | Incident/accident record   | QA/HSE Department          | 20,000/- | Twice a year |
| <b>GMP and product contamination risks</b>   | GMP, hygiene and clean room practices                              | Training on SOPs, personal hygiene, cross contamination control           | Internal audit findings    | QA Manager                 | 30,000/- | Annual       |
| <b>Fire and emergency risks</b>              | Emergency response and firefighting training                       | Mock drills, use of extinguishers, evacuation plan                        | Drill reports              | Admin/HSE Manager          | 25,000/- | Bi-annual    |

## 6. PUBLIC CONSULTATION AND INFORMATION DISCLOSURE

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

### 6.1 Proponent's Environment Management Team

Following are the designated roles and responsibilities of the employees involved in the monitoring and management of the adverse impacts and will be appointed after operation of project starts.

| Roles and Responsibilities |                     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
|----------------------------|---------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Sr#                        | Concerned Persons   | Duties                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
| 1                          | The Project Manager | <p>Following will be the responsibilities of the Project Manager</p> <ul style="list-style-type: none"> <li>• Ensure that the contractor is aware of all specifications, legal constraints, standards and procedures pertaining to the project specifically with regards to environment.</li> <li>• Ensure that all stipulations within the EMMP are communicated and adhered to by contractor(s)</li> <li>• Monitor the implementation of the EMMP throughout the project by means of site inspections and meetings. This will be documented as part of the minutes of the site meeting documents</li> <li>• Ensuring project execution within defined budget and timelines</li> <li>• Conducting regular check of the project status and meetings with project team</li> <li>• Provide support and guidance to project team as and when needed</li> <li>• Project Manager is expected to continually monitor and improve the overall performance of their operation</li> </ul> |
| 2                          | HSE Manager         | <p>In addition to the health and safety responsibilities held by staff, managers and supervisors must do whatever is reasonably practical to ensure that both the workplace and the work itself are safe. This includes:</p> <ul style="list-style-type: none"> <li>• Ensuring that staff are appropriately trained and supervised</li> <li>• Identifying, assessing and managing health and safety risks</li> <li>• Consulting with workers (including staff, affiliates and contractors): <ul style="list-style-type: none"> <li>iv. Health and safety risk assessments</li> <li>v. Decisions are made about the measures to be taken to eliminate or control these risks</li> <li>vi. Health and safety risk assessments</li> </ul> </li> <li>• Implementing health and safety risk management programs relevant to their operations, teaching, research and consulting functions and work environment</li> </ul>                                                             |

- Reporting (to the Human Resources Unit), investigating and responding to all hazards, accidents, incidents and taking action to control the risk
- Assisting with the development, implementation and maintenance of a return to work program for injured staff.
- Be fully conversant with the EIA and conditions of its approval
- Be fully conversant with the EMMP
- Be fully conversant with all relevant environmental legislation, policies and procedures, and ensure compliance
- Convey the contents of this document to the contractor site staff and discuss the contents in detail with the Project Manager and Contractor
- Undertake regular and comprehensive inspection of the site and surrounding areas in order to monitor compliance with the EMMP
- Take appropriate action if the specifications contained in the EMMP are not followed
- Monitor and verify that environmental impacts are kept to a minimum, as far as possible
- Review and approve construction methods, with input from the Site Manager, where necessary
- Ensure that activities on site comply with all relevant environmental legislation
- Compile progress reports on regular basis, with input from the Site Manager, for submission to the Project Manager, including a final post excavation audit
- Liaise with the Site Manager regarding the monitoring of the site
- Report any non-compliance or remedial measures that need to be applied
- All environmental problems arising on the construction area will be reported to the Site Manager by the Environmental Manager. Reports on such problems will be submitted to the Project Manager by the Site Manager

## **6.2 The Responsible Authority**

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

- ⊙ Share information with stakeholders on proposed project installation and operation
- ⊙ Assess the impacts on the physical, biological, and socioeconomic environment
- ⊙ Understand stakeholder concerns regarding various aspects of the project commencement
- ⊙ Find out valuable suggestions by the stakeholders to improve the proposed project design
- ⊙ Understand the perceptions, assessment of social impacts and concerns of the affected people/communities of the project area
- ⊙ Find out the awareness level and situation of acceptability to identify any issues for the implementation of the proposed project

- ⊙ Invite people to express their views about the positive/negative impacts on their lifestyles and environment
- ⊙ Disclose information about contact offices/officers for any complaints/queries

It is envisaged, there will be no social impact being foreseen due to the construction and operation Ahmad Amin Textile Industries at the proposed location. This EIA Report includes all the comments, which were taken into account during the social survey and preparing the definitive development concept for the installation and operation of Ahmad Amin Textile Industries.

### **6.3 Objectives of Consultation**

Public consultation plays a vital role in studying the impacts of the proposed project on stakeholders in successful implementation and execution of the project. It provides an opportunity to exchange knowledge with the beneficiaries and affected parties. Referring particularly to a project related to environmental assessment, involvement of the public is all the more essential, as it leads to better and more acceptable decision-making. The overall objective of the consultation with the stakeholders is to help verify the environmental and social issues, besides technical ones, that have been presumed to arise and to identify those which are not known or are specific to the project. In fact, discourse with many who have thoroughly observed the site conditions in the pre-development phase, goes a long way in updating the knowledge and understanding.

### **6.4 Identification of Stakeholders**

All the people who are directly or indirectly affected or concerned with the project are the stakeholder. Besides the living population of the surrounding areas, some other stakeholders were identified and contacted which enlisted below. They are the key players including; shops, public and government offices, schools, university, hospitals, hotels, international agencies and the NGOs. Not only published material, brief or other literature were obtained on request, but also noted their views and the concerns, in an official capacity as well as on the personal basis. Following stakeholders are identified for this project:

Project Affected Persons (PAPs) include the settled families, either property owners or the tenants, businessmen (big, shopkeepers, vendors, etc.), employees of the commercial entities. PAPs are of two types, for instance:

#### **6.4.1 Direct Stakeholders**

No disturbance in the local community is being foreseen due to the installation of the aforesaid project as the community is at a safe distance. No property loss is being envisaged due to the construction of the Ahmad Amin Textile Industries.

#### **6.4.2 Indirect Stakeholders**

Indirect impact will occur on those who are living or doing business within a Project Area of Influence (AOI). In the case of the proposed project, the citizens of nearby small towns) will get opportunities of being employed. So, in the early development stages and during the operational phase the people will be benefited due to the installation of the Ahmad Amin Textile Industries.

#### **6.4.3 Other Departments and Agencies**

Following departments are related to the project in public consultation:

- ➔ Government agencies responsible to deal with the project related activities
- ➔ Government Agencies directly, indirectly or widely involved in the execution and monitoring of the proposed project
- ➔ Government departments such as TMA and Planning & Development Department, Forest Department, Agricultural Department, Industrialist around the estate and working on the other development activities are considered as indirect stakeholders
- ➔ Workers of political, cultural, religious or social scientific bodies, directly or indirectly related to the project

#### **6.5 Public Disclosure**

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

#### **6.6 Consultation Process**

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

- ☒ Data collection regarding the socioeconomic condition of the study area
- ☒ Pre-testing of socioeconomic survey tools in the field
- ☒ To consult the locals for collection of information on biological environment

Various meetings with the stakeholders were held the following objectives:

- ➔ Share information with stakeholders on the proposed project and expected impacts on community in the vicinity of the project

- ➔ Understand stakeholders' concerns regarding various aspects of the project, including the existing condition of the upgrading requirements, and the likely impact of construction and operation activities
- ➔ Provide an opportunity to the public to influence the project design in a positive manner
- ➔ Obtain local and traditional knowledge, before decision making
- ➔ Increase public confidence about the proponent, reviewers and decision makers
- ➔ Reduce conflict through the early identification of controversial issues, and work through them to find acceptable solutions
- ➔ Dissemination of information through discussions, education and liaison
- ➔ Documentation of information narrated by the stakeholders and mitigation measures proposed by the stakeholders
- ➔ Incorporation of public concerns and their address in the EIA; and eliciting their comments and feedback
- ➔ Create a sense of ownership of the proposal in the mind of the stakeholders

## **6.7 Environmental Practitioners and Experts**

Officers of government departments and industries were consulted by the socio-environmental team of the consultants and concerned details about the project were noted down through personal interviews, group meetings, etc., in their offices, for instance. List is attached as an annexure.

## **6.8 Affected and Wider Community**

In addition, to the use of direct methods to evince the response of the various stakeholders in the population of the study area was ascertained by conducting a sample survey, through specially formatted questionnaires (attached in the Annexure of this EIA Report). Questions posed to the public were related to creation of possible impacts, adverse impacts and beneficial impacts, including; employment opportunities, income generation activities, change in living standards and provision of the amenity.

- ☒ Disclose the proponent plan of the construction of the proposed facility
- ☒ To share information on the design and specifications of proposed project works
- ☒ To analyze the expected impact on the socioeconomic environment
- ☒ To understand their concerns regarding various aspects of construction and operation

### **5.8.1 Views, Concerns and Suggestions of Various Stakeholders**

Community showed a lot of concerns; a few are being mentioned here:

- ✚ Removal of shrubs and trees should be avoided to the extent possible
- ✚ The project will become the source of income for local to earn their livelihood easily and honorably
- ✚ The area will become further industrialized

- ↳ For the solid waste management and waste disposal, proper disposal techniques should be adopted
- ↳ Employment opportunities will be generated, and locals should be hired on the priority basis
- ↳ The air pollution is one of the major impacts of the proposed project, so ambient air quality should be monitored regularly.
- ↳ Water spraying/sprinkling should be done on the regular basis during construction phase to avoid dust emissions
- ↳ Removal of shrubs and trees should be avoided to the extent possible
- ↳ Good relations with the local communities will be promoted by encouraging Contractor to provide opportunities for skilled and unskilled employment to the locals as well as on-job training
- ↳ The contractor should prefer hiring local labor from adjacent nearby villages
- ↳ Indigenous trees around the facility should be planted to control air pollution and as the compensation
- ↳ Noise reducing barriers should be installed to reduce noise pollution

#### **Concerns**

- ☒ Workers should be hired from local community
- ☒ Proper disposal of solid waste should be practiced
- ☒ Indigenous trees around the facility should be planted to control air pollution
- ☒ Removal of shrubs and bushes should be avoided to the extent possible

## **7. CONCLUSION AND RECOMMENDATIONS**

The findings of EIA Report showed that although the establishment of Ahmad Amin Textile Industries is expected to have significant negative impacts on the environment during the construction and operational phases, but the severity of these adverse impacts can be reduced significantly by adopting the suggested mitigation measures in EMMP with true spirit. Moreover, their severity can be further reduced by adopting relative mitigation measures as proposed in the Chapter 7 of this EIA Report. The impacts were assessed by frequent site visits, studying related projects and by reviewing relevant documents. Generally, the project is planned to follow efficient environmental management systems. Specific environmental and social benefits have been mentioned below which depend on the proper application of mitigation measures suggested in EMMP and best engineering practices.

### **7.1 Merits and Demerits**

The major positive impacts include;

- ⊙ Increased job opportunities,
- ⊙ Business opportunities,
- ⊙ Availability to the locals.
- ⊙ Environmental enhancement through tree planation.

The project will raise the income of the persons directly associated with project as well as it will also improve the socio-economic status of the area. The project is expected to stimulate the local economies of the community as the majority of the people living in the nearby areas are associated with the labor related activities.

In general, potential adverse environmental effects resulting from the proposed activities will be temporary in nature, short-term and of low magnitude. Through application of standards, recommended mitigation measures, adherence to applicable permit conditions and regulations, adverse impacts can be effectively minimized. The project is not likely to have significant adverse environmental impacts which cannot be mitigated. Negligible negative impacts that are likely occur during Ahmad Amin Textile Industries includes; air pollution due to movements of vehicles, removal of bushes and shrubs, potential impact to the local water resources and social impacts may affect the locals residing in the nearby community can be foreseen. Mitigation measures will be implemented to minimize environmental impacts though they are still negligible. There are certain mitigations suggested to cater for the aforesaid issues.

## **7.2 Recommendations**

The intensity and severity of impacts occurred due to the Ahmad Amin Textile Industries varies with change in the nature and magnitude of the project as well as depends upon the baseline environmental conditions of the area. The mitigation measures will require constant information flow and consultation with the stakeholders to ensure the least adverse social-economic impact to outweigh the “no project development” scenario.

- ☒ The adverse environmental impacts can be reduced significantly by adopting best management and monitoring practices as well as by implementation EMMP with true spirit
- ☒ Proper PPEs including aprons, rubber gloves and shoes should be provided to workers
- ☒ No compromise on public health and environment should be allowed.
- ☒ Waste minimization practices should be introduced to workers by conducting lectures on spot to aware the workers about the long-term benefits of the same in lieu of surrounding environment.
- ☒ A proper tree plantation plan should also be developed in order to make the process environment friendly.
- ☒ Small domestic waste storage bins should be placed at different locations for proper collection and disposal of the solid waste.
- ☒ It is recommended that the Proponent should obtain an Environmental Approval (NOC) from the Punjab-EPA before proceeding further.

### **LIST OF ABBREVIATIONS**

| <b>ABBREVIATION</b> | <b>DESCRIPTION</b>                        |
|---------------------|-------------------------------------------|
| ASR                 | Air Sensitive Receivers                   |
| BDL                 | Below Detection Limit                     |
| BOD                 | Bio-chemical Oxygen Demand                |
| CC                  | Construction Contractor                   |
| CDM                 | Clean Development Mechanism               |
| CO                  | Carbon Monoxide                           |
| COD                 | Chemical Oxygen Demand                    |
| DCO                 | District Co-ordination Officer            |
| DD                  | Deputy Director                           |
| DG                  | Directorate General                       |
| DRR                 | Disaster Risk Reduction                   |
| DWQS                | Drinking Water Quality Standards          |
| EE                  | Environmental Engineer                    |
| EIA                 | Environmental Impact Assessment           |
| EMMP Plan           | Environmental Management and Monitoring   |
| EPA                 | Environment Protection Agency             |
| EPC                 | Engineering Procurement Construction      |
| EPD                 | Environment Protection Department         |
| EPHE                | Environmental & Public Health Engineering |
| FGDs                | Focused Group Discussion                  |
| GDP                 | Gross Domestic Product                    |
| gm                  | Gram                                      |
| GoP                 | Government of Pakistan                    |
| IEE                 | Initial Environmental Examination         |
| LGO                 | Local Government Ordinance                |
| LDL                 | Lowest Detection Limit                    |
| mg/l                | Milligrams per liter                      |
| MSL                 | Mean Sea Level                            |

|                 |                                           |
|-----------------|-------------------------------------------|
| NCS             | National Conservation Strategy            |
| NEQS            | National Environmental Quality Standards  |
| NEP             | National Environmental Policy             |
| NO <sub>2</sub> | Nitrogen Dioxide                          |
| NOC             | No Objection Certificate                  |
| OH & S          | Occupational Health and Safety            |
| PAPs            | Project Affected Persons                  |
| PEPA            | Pakistan Environmental Protection Act     |
| PEPC            | Pakistan Environmental Protection Council |
| PEQS            | Punjab Environmental Quality Standards    |
| PM              | Particulate Matter                        |
| SO <sub>2</sub> | Sulfur Dioxide                            |
| SOP             | Standard Operating Procedures             |
| SWM             | Solid Waste Management                    |
| TA              | Technical Assistance                      |
| TORs            | Terms of Reference                        |
| TSS             | Total Suspended Solids                    |
| UNDP            | United Nation Development Pro             |
| WASA            | Water and Sanitation Agency               |

### LIST OF INDIVIDUALS CONSULTED AND THEIR VIEWS

| SR. NO. | NAME            | ID CARD NUMBER   | OCCUPATION                            | CONCERN/VIEWS                                                                 |
|---------|-----------------|------------------|---------------------------------------|-------------------------------------------------------------------------------|
| 1.      | Ghulam Shabir   | 36303-7360882-5  | farmer                                | Positive                                                                      |
| 2.      | Ansar Ali       | 34101-5615463-9  | Farmer                                | Positive                                                                      |
| 3.      | Liaqat Ali      | 34101-527.5075-1 | Farmer                                | Positive                                                                      |
| 4.      | Abdul Rehman    | 34102-0434594-7  | Shop Owner                            | Concerned about air pollution                                                 |
| 5.      | Muhammad Bilal  | 36303-9299987-3  | Shop Owner                            | Concerned about Noise pollution                                               |
| 6.      | Muhammad Yousaf | 36302-5965175-3  | Daily Wager                           | Positive                                                                      |
| 7.      | Muhammad Asif   | 36303-4107290-1  | Daily Wager                           | Positive                                                                      |
| 8.      | Muhammad Iqbal  | 36303-1561962-1  | Vendor                                | Positive                                                                      |
| 9.      | Abdul Hameed    | 36302-0474840-7  | Vendor                                | Positive                                                                      |
| 10.     | Muhammad Imran  | 42201-3691562-7  | Daily Wager                           | Positive                                                                      |
| 11.     | Muhammad Sabir  | 36303-9221124-3  | Vendor                                | Concerned noise pollution                                                     |
| 12.     | Muhammad Shahid | 36306-4248907-7  | School Teacher                        | Wastewater should be properly treated prior to final disposal in nearby drain |
| 13.     | Sohail Ahmad    | 35304-8398428-1  | Field Officer Horticulture department | Plantation should be carried out at extensive scale                           |

## Sources of Data

-  Publish Articles
-  Field Surveys
-  Public Consultations

### **TERMS OF REFERENCE (TORS)**

The consultant is required to carry out an initial environmental examination study of the project under Section-12 of Pakistan Environmental Protection Act 1997/ Punjab Environmental Protection (Amendment) Act 2012.

The Study should be comprehensive and should cover all aspects which are envisaged under the relevant national and provincial laws & regulations including but not limited to:

- Identification and recommendation for suitable solution/treatment/mitigation measures for emissions and effluents such as wastewater and sludge etc. in accordance with Punjab Environmental Quality Standards (PEQS).
- Identification and recommendation for suitable solution/treatment/mitigation measures of solvents, oils (tar), hazardous waste, organic compounds, steam, flue gases, particulate matter and chemical compounds harmful for the environment and other substances leading to air, noise, water and soil pollution in accordance with PEQS.

The Study should be acceptable to the relevant national and/or provincial authorities (relevant authorities) in Punjab.

### **PROJECT TEAM AND RESPONSIBILITIES**

| <b>Name</b>    | <b>Qualification</b>                                                    | <b>Position</b>        |
|----------------|-------------------------------------------------------------------------|------------------------|
| Aqsa Nazir     | M.Sc (environmental science)<br>University of Punjab Lahore.            | Environmental          |
| Muhammad Irfan | L.L.B, Diploma in<br>environmental law.<br>University of Punjab Lahore. | Environmental          |
| Iqra Khalid    | University Of Engineering and<br>Technology.                            | Environmental Engineer |
| Maryum Majid   | University of Punjab Lahore.                                            | Environmental          |