MIMA KNIT PRIVATE LIMITED

(Socks Manufacturing Unit)

49-Km Multan Road, Phool Nagar, District Kasur

ENVIRONMENTAL IMPACT ASSESSMENT (EIA) REPORT

Sustainable Environmental Solutions

Office S-9, 2nd Floor, Fazal Apartments
5-Faiz Road, Muslim Town, Lahore
Phone: +92 42 35862622
E-mail: sesolutions.env@gmail.com

EXECUTIVE SUMMARY

1.0 INTRODUCTION

1.1 Title and Location of Project:

M/s Mima Knit (Pvt.) Ltd. are in the process to establish a socks manufacturing unit located at **49-Km Multan Road, Phool Nagar, District Kasur**.

1.2 Name of the Proponent

The proponent of the proposed project (establishment of a socks manufacturing unit) is Rehan Shahid who is president of the company.

1.3 Name of the Organization Preparing the Report

M/s Sustainable Environmental Solutions (SES) has performed this EIA Study. The name, qualifications & other details of persons / team members performing or carrying out the said environmental study has been discussed in the next section. However, contact details of company & representatives are as under:

Consultant Company / Firm Details:

Contact: Sustainable Environmental Solutions (SES)
Address: Office S-9, 2nd Floor, Fazal Apartments, 5-Faiz Road, Muslim Town, Lahore - Pakistan
Tel: +92 42 35862622

Representatives Details:

Waheed Ahmad (Environmental Consultant)
Contact: +92 321 4111718
Yahya Aslam Bambal (Environmental Consultant)
Contact: +92 321 4074931

2.0 SCREENING

The standardized approach i.e. defined in applicable regulations was applied. The proposed project was assessed based upon a set of criteria determined by Environmental Protection Agency (EPA) i.e. Review of IEE & EIA Regulations, 2000 provided by Government of Pakistan, Ministry of Environment were considered for the purpose of screening mainly.

According to the regulations "Punjab Environmental Protection (Review of Initial Environmental Examination & Environmental Impact Assessment) Regulations, 2022 the proposed project falls in "Schedule II; category B-Manufacturing and Processing; 6. Textile units comprising of dyeing & printing" made under section 12 of Punjab Environment Protection Act 1997 (Amended 2012) under which the Environmental Impact Assessment (EIA) study is mandatory for getting Environmental Approval. The Director General, EPA Punjab is the authority to issue the requisite Environmental Approval after proper review of the project.

3.0 SCOPING

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

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

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

4.0 CONSIDERATION OF ALTERNATIVES

This section covers the project alternatives considered including site alternatives, design / technology alternatives, environmental alternatives and economic alternatives for establishment of the proposed industrial unit sustainable. An analysis of the available alternatives is necessary to establish that the most suitable management and technology options are adopted for the project, while minimizing environmental impacts. This evaluation explains the selection of the most feasible alternative in terms of economics, environment and health & safety. In particular, it outlines the following options that were considered for this project;

5.0 POLICY, LEGAL AND ADMINISTRATIVE FRAMEWORK

This EIA Study has been carried out in the light of the policy guidelines of the Government of Pakistan, under the procedures and practices formulated by the Federal Environmental Protection Agency (EPA).

The applicable laws for the environmental study of the proposed project are briefly given below:

- National Conservation Strategy, 1992
- PEPO,1983 & PEPA,1997
- Punjab Environmental Protection Act-1997 (Amended 2012)
- National Environmental Policy, 2005
- (Draft) Punjab Environmental Policy, 2055
- Punjab Environmental Protection (Review of IEE and EIA) Regulations, 2022
- Guidelines for Preparation and Review of Environmental Reports, 1997
- National Environmental Quality Standards
- Punjab Environmental Quality Standards
- Guidelines for Critical and Sensitive Area

- Policy and procedures for the Filling, Review and Approval of Environmental Assessments, 1997
- Guidelines for Public Consultation, 1997
- Factories Act, 1934
- Punjab Wildlife Protection Act, 1974
- Forest Act, 1927
- Explosive Act, 1884
- Pakistan Penal Code, 1860

6.0 DESCRIPTION OF THE PROJECT

M/s Mima Knit (Pvt.) Ltd. are in the process to establish a socks manufacturing unit at 49-Km Multan Road, Phool Nagar, District Kasur. The description of the proposed project is as under:

6.1 Brief outline of the Proposal

The subject proposed project is a socks manufacturing unit located at 49-Km Multan Road, Phool Nagar, District Kasur. The capital cost of the proposed project will be approximately 422 million. The project is spread over an area of 174,240 SFT whereas the covered area will be 103,272 SFT and rest of the area (70,968 SFT) will be open. The production capacity of the proposed unit will be 3000 dozen socks / day. The quantity of required raw materials (yarn) will be 220 yarn bags per day. The storage capacity of the proposed unit will be 800 yarn bags. The site is located near Multan Road where numbers of industrial units are located in the proximity of proposed unit.

It is important to point out here that the proponent of the project has rented the ex-textile mills building/structure namely Abu Bakkar Textile Mills (Pvt.) Ltd. for the establishment of subject proposed project. So, no full fledge construction of the unit will be involved only alteration or renovation of the building will be undertaken as per requirement and machines will be installed.

7.0 DESCRIPTION OF ENVIRONMENT

The environmental studies have been carried out in and around the project area to get baseline environmental data and to know physical, ecological and socio-economic conditions. The information has also been obtained through site visits, interaction/consultation with people living/working in and around the project area. People have been interviewed and interaction has been made with the other stakeholders. Information has also been obtained from laboratory analysis, Govt. Departments and review of previous studies. During this study physical (topography, geology/seismology, stratigraphy, land use, climate, surface and ground water resources, air quality, noise level, traffic volume), ecological (flora and fauna) and socio-economic components (demographic studies, infrastructure of the area, social amenities, health, education, economic condition, employment in the area, women status, cultural, archeological sites and religious status) have been studied.

8.0 IMPACT ASSESSMENT

The primary function of an environmental impact assessment study is to predict and quantify the magnitude of potential impacts, assess and evaluate the magnitude. The impact assessment forms the basis for development of Environmental Management Plan. Environmental impacts could be positive of negative, direct or indirect, local or regional and also reversible or irreversible.

All the potential environmental impacts had been identified during literature review, visits of project site and nature / manufacturing process of the proposed project. Various types of environmental issues likely to crop up during life cycle of project are grouped in different phases; project location related impacts, project design related impacts, construction phase impacts and operational phase impacts.

9.0 SCREENING OF POTENTIAL ENVIRONMENTAL IMPACTS AND MITIGATION MEASURES

The impacts during all of three stage design, construction and operation of the proposed project such as impacts on physical environments including changes in land use/appearance, seismic hazard, soils/geology, impacts on topography, impacts on air quality, noise pollution, impacts on ground water, water consumption, wastewater generation, solid wastes, emergency conditions; ecological environment including impacts on flora & fauna and socio-economic environment including health and safety of workers, etc. have been considered and estimated/assessed in the light of public comments, public interviews and in meetings with stakeholders.

The impacts of proposed project activities during all the phases (design, construction and operation) have been considered and their remedies have been suggested. These impacts may be on soil, topography, climate, water consumption, the health and safety of workers, surface and ground water, air quality, flora and fauna, existing utilities and impacts due to noise, wastewater, and solid waste generation.

Mitigation measures will be adopted while construction & operational phases of the proposed project such as treatment of sewage, development of solid waste management plan, implement environmental monitoring plan (ambient air / stack emissions monitoring, ground water quality, sewage/wastewater quality check & noise level monitoring) during construction & operational phases, overhauling / maintenance schedule & inspection plan, EMMP implementation, firefighting arrangements, to ensure the health & safety of workers, emergency procedures / emergency preparedness plan, etc.

9.1 The Major Impacts

The major Impacts arising from the proposed project are as under in the following table:

IMPACTS	DETAILS / RISKS
Impacts on Air Quality	During regular operations of the proposed project, no as such process air emissions containing hazardous nature gases will be produced. However, negligible emissions from operations of standby power generator will be generated, which may require proper safety & precautionary measure in place to avoid any degradation of ambient air of the area. However, boiler will also be installed which will be fired on Natural Gas and have no as such air emissions.
Noise	During the operational stage, the noise will be produced from operation of plant machinery. Noise levels will be increased at some negligible level near the production hall but it will be mitigated if not, may have moderate negative impact.
Water Consumption	In the proposed project water will mainly be used in dyeing, washing, toilets/washrooms, kitchen, etc.
Wastewater Generation	During operational phase of the proposed socks manufacturing unit, approximately 60,000 to 70,000 gallons/day of wastewater will be produced from different sources like production (dyeing & washing), toilets / washrooms & kitchen / mess, etc.
Solid Waste Generation	During the operational phase of the subject proposed project, no any type of hazardous nature solid waste will be produced. Recyclable nature (non-hazardous waste) including yarn corn, lose thread, empty carton, packaging waste, polythene bags, wood, etc. will be produced. Moreover, organic waste will also be produced from kitchen/mess.
Emergency Response	The operation of the proposed project will involve workers and visitors who may become ill or have work related accidents. In addition, disasters including natural & anthropogenic such as earthquakes, floods, heavy rainfall / thunder storm & fires due to electrical short circuiting, overheating, etc. may occur which have to be considered for minimizing their impacts.
Impacts on Flora	Operation of the proposed project will not exert significant negative impact overall on flora of the site and also flora of local /surrounding area.
Impacts on Fauna	Noisy operation of machines, standby power generators will have some negligible impact on fauna (wild birds). It will be minor negative impact if not mitigated properly.
Health & Safety of Workers	The workers especially working in the production hall / production area may be at health risk, because there are always chances of accident, incident, near miss, dangerous occurrence, work related ill-health while working at workplace. The workers may face ill-health, disease and temporary & permanent disability in case of severe injury and may face fatality in case of severe accident. If they do not properly train and provided with Personal Protective Equipment (PPEs) this will be major negative impact if not mitigated properly.

9.2 Recommendations for Mitigation Measures:

Following mitigation measures are recommended for the protection & safety of environment:

IMPACTS	MITIGATION MEASURES
Impacts on Air Quality	In order to minimize air pollution, following mitigation measures are recommended:

	▪ An air quality monitoring and improvement plan will be developed to keep the air pollution level within the limits of Punjab Environmental Quality Standards (PEQS) ▪ Standby power generators will be placed at concrete foundation equipped with shock absorber rubbers, sound proof canopy, silencer, smoke arrestor and stack with proper height. ▪ Maintenance and overhauling schedule will also be developed. ▪ Standby power generator and boiler will be maintained or over hauled well within time according to schedule and periodically checked or inspected to avoid any excessive smoke. ▪ No leak system by proper maintenance of valves, seals & flanges ▪ Well capped containers ▪ Good housekeeping,
Noise	▪ Proper foundation of the plant machinery, standby power generator & boiler will be designed to cope with the problem of tremor / vibration which will consequently abate the noise problem. ▪ Noise level monitoring plan and improvement plan will be developed and implemented with letter & spirit. ▪ The standby power generators and boilers will be over hauled and well-tuned according to the schedule to avoid excessive noise. ▪ 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.
Water Consumption	▪ At open places the grassy lawns will be developed to recharge the water table which is help to control the surface runoff during rainy season. ▪ More landscaping will also be done at available open place after completions of project ▪ The overall nature of the area is agricultural it is also help to recharge the water table. ▪ Water to be used in production hall will be re-used/re-cycled. ▪ The workers will be given training to avoid wastage of water. ▪ Regular inspection of water tapes, valves and water lines as per schedule or periodically will be undertaken.
Wastewater Generation	▪ Chemical + Biological type of WWTP / ETP with capacity of 100,000 gallons / day will be installed for the treatment of the wastewaters to fulfill the compliance of PEQS. ▪ After treatment, the treated wastewater will be disposed off into wastewater channel.
Solid Waste Generation	▪ The recyclable waste including yarn corn, lose thread, empty carton, packaging waste, polythene bags, wood, etc. will be handed over to EPA Approved waste contractor. ▪ Organic waste to be produced from kitchen / will be handed over to mess contractor who then will dispose off properly as per local Govt. policy like MSW wastes. ▪ A track record of solid waste will be maintained.
Emergency Response	▪ A comprehensive Emergency Response Plan (ERP) for emergency / fire conditions and disastrous situations will be developed and implemented whole heartedly during the operational phase of the project. ▪ Sufficient / appropriate firefighting arrangements such as Central fire hydrant system, fire extinguishers, fire alarm systems, heat detectors, smoke detectors, sand buckets, etc. have been placed /

	installed at many necessary locations in the unit. ▪ Firefighting arrangements have been undertaken according to the requirements of Civil Defense Department and international standards. ▪ Emergency assembly points are marked and factory workers are trained to cope with any emergency situation. ▪ Regular training workshops & emergency / fire drills of workers are scheduled to be held regularly. ▪ All firefighting, emergency and safety equipment shall be frequently checked and properly maintained. ▪ Safety signs, emergency exits, emergency routs will be displayed & mentioned at many / appropriate places. ▪ Emergency exits and routs will be kept clear from obstacles to avoid any hurdle / panic while emergency condition.
Impacts on Flora	▪ Beautiful landscaping including grown trees, ornamental / flowering plants & grassy lawns will be developed at available open places in the proposed unit. ▪ To avoid any negative impact on flora of the site and flora of project area / outside area, air emissions and wastewater quality will be monitored and kept controlled within PEQS limits.
Impacts on Fauna	▪ Best and latest technology will be selected which have low operational noise and emissions. ▪ Proper foundations will be constructed with shock / vibration absorbers to avoid tremor / vibration which may increase the noise level. ▪ Trees will be planted around the building as buffer zone and play as sound barrier. ▪ Beautiful landscaping including grown trees, ornamental / flowering plants & grassy lawns will be done on available open spaces in and outside/around the project site after completion of project which may attract the fauna (wild birds) to nest here. ▪ Noise level monitoring plan will also be developed to control excessive noise to avoid any negative impact on fauna which may disturbed them.
Health & Safety of Workers	▪ No worker aged below 18 years or over 60 years shall be employed for any job involving physical handling of hazardous substances. ▪ The workers will be given information, instruction, training and supervision specific to their job and / or nature / requirement of their work, in safety precautions and procedures. ▪ Protective clothing and equipment comprising helmet of cloth cap, safety spectacles or goggles, respirators or masks, rubber or plastic gloves and safety shoes 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. ▪ To avoid any potential environmental hazards the workers would be trained properly so that they know the potential hazard of chemical. ▪ Proper cross ventilation shall be undertaken 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 suitable / prominent places. ▪ Adequate supply of water shall be made available to the workers for personal washing as well as for washing their protective equipment. ▪ Protective clothing and equipment 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. ▪ First aid medical facility 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.

10.0 ENVIRONMENTAL MONITORING AND MANAGEMENT PLAN

A complete Environmental Monitoring and Environment Management Plan are recommended to regulate the requirements of Punjab Environmental Protection Act PEPA 1997-(as amended 2012).

A summary of mitigation measures suggested in Section 6 will be implemented through Environmental Monitoring and Management Plan which will ensure the identification of adverse environmental impacts and help to minimize / eliminate the adverse environmental impacts. The implementation of Environment Management Plan covers the possible impacts at design related, construction and operational phases. For effective implementation of Environment Management plan an Environmental Management Committee (EMC) headed by an environmentalist already exists for operational and during construction phase the contractor will be responsible for environment protection measures and apply good construction techniques to prevent negative environmental impacts.

The proponent / contractor will hire trained staff to ensure the enforcement of Environmental Management Plan. The equipments will be kept in proper condition to save the environment from damage.

During construction phase air quality, ground water quality & noise level will be monitored on monthly basis whereas, in operational phase air quality, ground water quality, wastewater quality & noise level will be monitored on quarterly basis. The wastewater/sewage produced from the said project will be treated through ETP/WWTP. Then it will be discharged to wastewater channel of the area. The cooling water will be reused/re-cycled. Horticulture Team will be formed to attend the issues relating to cleanliness, up-keeping, aesthetic beauty of the project site, general environmental enhancement, tree plantation, vegetation promotion, planting of flowers and ornamental plants on site.

10.1 Proposed Environmental Monitoring

To check the environmental performance of the project through its lifecycle and compliance of PEQS/NEQS environmental monitoring is essential part and tool which should be conducted to ensure effective surveillance of the environmental

parameters at various stages of the project as development/construction and operational. The following environmental monitoring would be implemented:

a. Ambient Air Quality Monitoring

While construction and operational phases of the proposed project ambient air quality will be monitored as per PEQS/NEQS and report should be submitted to EPA.

b. Noise Level Monitoring

Noise levels will be monitored at different points and keep the noise levels will be within PEQS/NEQS limits and report should be submitted to EPA.

c. Groundwater Quality

Groundwater quality will also be monitored and check the compliance the parameters of PEQS/NEQS and report should be submitted to EPA.

d. Wastewater Quality

Wastewater quality parameters will also be monitored as per PEQS/NEQS limits and report should be submitted to EPA.

11.0 STAKEHOLDERS CONSULTATION

Consultations and discussions with stakeholders have been carried out on formal and special issues. Consultation is the tool of communication between project holder and public living / working around the project area. Its goal is to improve decision-making and build understanding with individuals, groups and organizations. Such involvement increases long-term viability of the project and helps to resolve constrains if any at the initial stage. During the social impact assessment study, stakeholders were consulted in groups and individuals were interviewed. Group discussions were held to obtain feedback from the stakeholders. The proximity of the project area is a self- developed industrial setup, however overall the area all around, is rural / agricultural in nature. Discussions were held with Government and private offices and shops as well as EPA Punjab, Lahore.

12.0 CONCLUSION & RECOMMENDATIONS

The mitigation measures recommended in the EIA Report are sufficient to commence, complete and operate the project in environment friendly manner. The proposed project is suitable from environmental point of view. Recommendations have also been suggested for the safe operation of the unit as well as for the protection of environment.

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Section 1: INTRODUCTION

1.1 General

This section of the report provides an overview of the project including purpose of the project & report, identification of project & proponent, approaches and methodology, extent of EIA study, objective of the project, scope of study, details of consultant, brief description of nature, size & location of project, etc. And it also depicts need for Environmental Impact Assessment (EIA) for the proposed socks manufacturing project.

1.2 Proposed Project Introduction

M/s Mima Knit (Pvt.) Ltd. are in the process to establish a socks manufacturing unit located at 49-Km Multan Road, Phool Nagar, District Kasur.

1.3 Purpose of Report

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.

The report provides relevant information, as required under the officially approved format, to help the decision makers i.e. EPA Punjab before issuing the Environmental Approval.

1.4 Identification of the Project and Proponent

a. Identification of the Project

The subject proposed project is basically socks manufacturing unit where socks will be produced.

b. Proponent

The proponent of the proposed project (establishment of a socks manufacturing unit) is Rehan Shahid who is president of the company.

1.5 Need for Environmental Impact Assessment (EIA)

It is mandatory provision to carry out Environmental Reports (IEE / EIA) to obtain Environmental Approval from provincial agency for different projects before commencement of construction or operation.

a. Section 12 of PEPA-1997 (as amended 2012):

Initial Environmental Examination and Environmental Impact Assessment –

(1) According to the Section 12 of Punjab Environmental Protection Act, 1997 (As Amended 2012) *"(1) No proponent of a project shall commence construction or operation unless he has filed with the Provincial Agency an initial environmental examination or where the project is likely to cause an adverse environmental effect, an environmental impact assessment, and has obtained from the Provincial Agency approval in respect thereof"*.

(2) The [Provincial Agency] shall:-

(a) review the Initial Environmental Examination and accord its approval, or require submission of an Environmental Impact Assessment by the proponent; or

(b) review the Environmental Impact Assessment and accord its approval subject to such conditions as it may deem fit to impose, require that the Environmental Impact Assessment be re-submitted after such modifications as may be stipulated, or reject as being contrary to environmental objectives.

b. Punjab Environmental Protection (Review of IEE and EIA) Regulations, 2022

As per Punjab Environmental Protection (Review of Initial Environmental Examination & Environmental Impact Assessment) Regulations, 2022 the proposed project falls in "Schedule II; category B-Manufacturing and Processing; 6. Textile units comprising of dyeing & printing" for which EIA of the project is a mandatory requirement.

c. Environmental Approval / NOC Under Section 12

So, in the light of above mentioned laws and regulations Environmental Approval/NOC under section 12 of Punjab Environmental Protection Act, 1997 (as amended 2012) for the establishment of the proposed project (socks manufacturing unit) is mandatory. To obtain the above mentioned Environmental Approval/NOC this EIA Study has been carried out.

This Environmental Impact Assessment (EIA) Study will cover the Section 12 of PEPA, 1997 (amended 2012) for obtaining the Environmental Approval for construction or operation of the proposed project.

1.6 Approaches and Methodology

The existing information to establish a database for the EIA of the proposed project was collected from different government departments; review of previous studies and through site visits of the proposed project.

The SIA of the proposed project site was conducted through consultation with the community. The locals / stakeholders were interviewed to get their comments and views regarding the development of the proposed project. The proximity of the proposed site is commercial cum industrial (though the area is of agricultural nature in the broad spectrum); the persons working in different industries and

locals have been interviewed.

1.7 Extent of EIA Study

Following factors during design, construction and operational phases have been taken into account to assess the Environmental Impacts of the proposed project:

d. Environmental Impacts due to land use, location, waste generation, utility services consumption, noise, oil/fat generation etc.
e. Environmental Impacts on physical resources i.e. soil, topography, geology, climate, air quality, etc. ecological resources i.e. flora and fauna as well as health and safety of workers.

1.8 Magnitude of Efforts

Visits to the project site and surrounding area have been done. All the potential/possible stakeholders such as EPA (local officials), Govt. of Punjab and private community have been contacted to get the relevant data, for preparation of EIA Study. Primary & Secondary Data has been analyzed and previous studies have been reviewed.

1.9 Detail of Consultants

M/s Sustainable Environmental Solutions (SES) has performed this EIA Study. The name, qualifications & contact details of persons / team members performing or carrying out the said environmental study is attached as annexure. The contact detail of representatives is as follows:

Consultant Company / Firm Details:

Contact: Sustainable Environmental Solutions (SES)
Address: S-9, 2nd Floor, Fazal Apartments, 5-Faiz Road, Muslim Town, Lahore - Pakistan
Tel: +92 42 35862622

Team Members:

The details about team members including qualification & experience is as under:

Waheed Ahmad Team Leader / Coordinator Contact #: 0321-4111718	**A. Qualification** • M. Phil Environmental Sciences (PU) • M.Sc. Applied Environmental Sciences (PU) • Post Graduate Diploma in Environmental Laws (PU) • NEBOSH IGC *"Occupational Safety & Health"* • IOSH *"Managing Safely"* • One Year Diploma in Environmental Management (MIIM) • HABC Level 2 in Fire Safety (QCF) • International Workplace Health & Safety (British Safety Council) • Occupational Health & Safety Management Training (OHSAS 18001)

	• Environmental Audit Training; ISO 14001 – Lead Auditor Course **B. Experience** 10 years of experience as Environmentalist for carrying out EIA Studies, IEE Studies, EMPs, Environmental Compliance Status Reports for various projects.
Yahya Aslam Bambal Team Member / Environmental Consultant	**A. Qualification** • M. Phil Environmental Sciences (PU) • M.Sc. Applied Environmental Sciences (PU) • Post Graduate Diploma in Environmental Laws (PU) • NEBOSH IGC *"Occupational Safety & Health"* • IOSH *"Managing Safely"* • HABC Level 2 in Fire Safety (QCF) • International Workplace Health & Safety (British Safety Council) • Occupational Health & Safety Management Training (OHSAS 18001) • Environmental Audit Training; ISO 14001 – Lead Auditor Course • Training in *"Skills in Administration"* (Pakistan Institute of Management) • *"Value Based Management"* (Pakistan Institute of Human Development) **B. Experience** 09 years of experience as Environmentalist for carrying out EIA Studies, IEE Studies, EMPs, Environmental Compliance Status Reports for various projects.
Zia-Ud-Din Kasuri **Advocate Supreme Court** (Member Legal)	• M.A • LLM, M. Phil • LLB (Shariah & Law) • Post Graduate Diploma in Environmental Laws (PU)

1.10 Brief Description of Nature, Size and Location of Project

a. Nature & Size

The subject proposed project is a socks manufacturing unit located at 49-Km Multan Road, Phool Nagar, District Kasur. The capital cost of the proposed project will be approximately 422 million. The project is spread over an area of 174,240 SFT whereas the covered area will be 103,272 SFT and rest of the area (70,968 SFT) will be open. The production capacity of the proposed unit will be 3000 dozen socks / day. The quantity of required raw materials (yarn) will be 220 yarn bags per day. The storage capacity of the proposed unit will be 800 yarn bags. The site is located near Multan Road where numbers of industrial units are located in the proximity of proposed unit.

It is important to point out here that the proponent of the project has rented the ex-textile mills building/structure namely Abu Bakar Textile Mills (Pvt.) Ltd. for the establishment of subject proposed project. So, no full-fledged construction of the unit will be involved only alteration or renovation of the structure will be undertaken as per requirement and machines will be installed.

b. Location of the Project

The proposed projects site is located at 49-Km Multan Road, Phool Nagar, District Kasur.

1.11 Roles and Responsibilities

The executing firm/company of the proposed project will be the M/s Mima Knit (Pvt.) Ltd. Roles and responsibilities have been proposed in the EIA report.

1.12 Implementation of Mitigation Measures

Proposed mitigation measures as defined in the EMP will be implemented with responsibilities assigned to various departments and agencies.

1.13 Role of Environmental Protection Agency, Punjab

The main responsibility of Environmental Protection Agency, Punjab will be to monitor the mitigation measures, which will be taken up or implemented by M/s Mima Knit (Pvt.) Ltd.

1.14 Structure of the Report

Section 1 **"Introduction"** Briefly presents the project introduction, purpose of report, identification of project & proponent, details of consultant and brief description of nature, size & location of project.

Section 2 **"Screening"** this section covers the need of environmental study (IEE or EIA) and describes in which category the project falls as per Punjab Environmental Protection (Review of IEE & EIA) Regulations, 2022.

Section 3 **"Scoping"** briefly presents the scoping of impacts and mitigation measures, spatial and temporal boundaries of environmental assessment, important issues and concerns raised during consultation and significant impacts and factors to be determined.

Section 4 **"Consideration of Alternatives"** covers the different alternatives their selection and rejection criteria which includes Site alternatives, Design / Technology alternatives and environmental alternatives

Section 5 **"Policy, Legal and Administrative Frameworks"** Comprises the policy, guidelines, statutory obligations and roles of institutions concerning EIA study of the proposed project.

Section 6 **"Description of the Project"** Presents relevant information about objectives of project, location and site layout of the project, land use on the site, road access, vegetation features of the site, cost and magnitude of operation, schedule of implementation, description of the project and restoration & rehabilitation plans

Section 7 **"Description of Environment"** presents clear cut picture of existing environmental resources including baseline physical environment, baseline ecological environment & baseline socioeconomic environment. Moreover, this section also covers lab reports of environmental analyses and suitability of the site.

Section 8 **"Impact Assessment"** briefly presents the primary function of an environmental impact assessment study and includes methodologies for impact identification and characteristics of impacts (nature, magnitude, extent & location, timing, duration, reversibility, risk).

Section 9 **"Screening of Potential Environmental Impacts and Mitigation Measures"** Deals with the potential environmental impacts and mitigation measures, which have been proposed to mitigate the environmental impacts of the proposed project including project location, design, construction phase, operational phase and potential environmental enhancement measures.

Section 10 **"Environmental Management & Monitoring Program"** Outlines description of proposed mitigation actions, schedule for implementation and environmental budget, environmental management team, proposed monitoring program to assess performance or output of EMP, proposed EMP reporting & reviewing procedure and any training needs required to ensure implementation of EMP and Monitoring Plans.

Section 11 **"Stakeholders Consultation"** consists of consultation with stakeholders, objectives of consultation, methodology of consultation, categories of stakeholders consulted, findings of overall discussion, etc.

Section 12 "**Conclusions & Recommendations"** This chapter will conclude the whole report and recommendations are suggested.

Section 2: SCREENING

The subject proposed project is establishment of a socks manufacturing unit namely “M/s Mima Knit (Pvt.) Ltd.” located at 49-Km Multan Road, Phool Nagar, District Kasur. The capital cost of the proposed project will be approximately Rs. 422 Million. The production capacity of the proposed unit will be 3000 Dozen Socks / day.

Screening was performed at the first stage of the EIA process which resulted in a key EIA decision, namely to either conduct the assessment (based on the likely significant impacts) or not conduct it (in the anticipated absence of such impacts). Screening was done as early as possible in the development of the proposal in order for the proponent and other stakeholders to be aware of possible EIA obligations.

The standardized approach i.e. defined in applicable regulations was applied. The proposed project was assessed based upon a set of criteria determined by Environmental Protection Agency (EPA) i.e. Punjab Environmental Protection (Review of Initial Environmental Examination and Environmental Impact Assessment) Regulations, 2022 provided by Government of Punjab were considered for the purpose of screening mainly.

According to the regulations **“Punjab Environmental Protection (Review of Initial Environmental Examination & Environmental Impact Assessment) Regulations, 2022 the proposed project falls in “Schedule II; category B-Manufacturing and Processing; 6. Textile units comprising of dyeing & printing”** made under section 12 of Punjab Environment Protection Act 1997 (Amended 2012) under which the Environmental Impact Assessment (EIA) study is mandatory for getting Environmental Approval. The Director General, EPA Punjab is the authority to issue the requisite Environmental Approval after proper review of the project.

Moreover, following factors were also considered at the earlier stage;

- Magnitude of change in environmental conditions
- Diversity of new features with the existing environment
- Potential for trans-boundary or over large area impact
- Number of people effected
- Likelihood of effecting receptors of other types (fauna and flora, businesses, facilities) be affected?
- Probability of affecting valuable or scarce features or resources be
- Risk of breached environmental standards
- Risk of affected protected sites, areas, features
- High/low probability of the effect occurring
- Long/short duration of effect

- Either effect is permanent or temporary
- Is the impact continuous rather than intermittent
- If it is intermittent will it be frequent rather than rare
- Reversibility of impacts
- The likelihoods to avoid, or reduce or repair or compensate for the effect

After detailed analysis on the basis of these factors; the proposed project was found suitable for Environmental Impact Assessment (EIA) Study rather than Initial Environmental Examination (IEE) Study.

Section 3: SCOPING

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

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

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

3.1 Methodology

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

- The key interest groups, both governmental and non-governmental, were identified – they include EPA, surrounding community and workers & management of adjacent industries

- Since, the people who can be effected by the project need to hear about it as soon as possible; so, scoping session was held inviting the representatives from identified groups and briefing them about the proposal while establishing good lines of communication. Their concerns are discussed in the coming sections.

- The main EIA techniques used in scoping were baseline studies, checklists and matrices. These techniques collected and presented knowledge and information in a straightforward way so that logical decisions can be made about which impacts are most significant.

- The concerns of the stakeholders were listened and noted down. If possible, negative ones were resolved at the spot whereas others area incorporated in the EIA study and decisions are made accordingly.

3.2 Spatial and Temporal Boundaries of Environmental Assessment

Temporal and spatial boundaries for the effects assessment are defined by the characteristics of the project and the Valued Environmental and Cultural Components (VECC) being assessed. These boundaries encompass time periods and areas during and within which the VECCs are likely to interact with or be influenced by the project.

Spatial boundaries vary according to the nature of the VECC but generally are defined in terms of:

- A local study area (LSA), where project effects can be predicted with a reasonable degree of accuracy and confidence and impacts are likely to be most concentrated – most of the subject project impacts are local e.g. air emissions, increased noise levels, wastewater and solid waste management, etc.
- A regional study area (RSA) where, depending on conditions (e.g., seasonal conditions, habitat use, more intermittent and dispersed project activities) – subject proposal does not impose any regional impacts

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

Table 3.1: Characterization of Potential Impacts Based Upon the Spatial Boundaries

Sr. No.	Potential Impacts	Spatial Boundaries	
		LSA	RSA
1	Air Quality	✓	✓ (if beyond limits)
2	Increased noise levels	✓	
3	Groundwater degradation	✓	
4	Surface water deterioration	✓	
5	Soil quality	✓	
6	Working personnel's Health & Safety	✓	
7	Lowering of ground water table		✓
8	Flora & Fauna	✓	✓

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

- **Baseline** – covers ecological, physical and human-related characteristics of the environment, prior to the initiation of the construction phase;

- **Construction** – includes all activities associated with project construction and before commencement of operational phase such as:

  - Infrastructure development;
  - mobilization of equipment and supplies to the site by road and air;

- Construction of site facilities including camp, infrastructure, stockpile, waste rock storage dump, water management facilities (diversions, settling ponds, seepage collectors) etc.

- **Camp operations** and personnel transport during construction;

- **Operations** – includes ongoing industrial processing, effluent disposal, waste management, noise levels, transport of raw materials, end products and personnel;

- **Decommissioning** – includes all activities to decommission industry and remove equipment and materials from the site, re-contour the site and restore drainage patterns to stable long-term conditions, and implement the final site reclamation procedures to prevent erosion and restore vegetation cover where feasible;

- **Closure** – refers to conditions that will exist on the site after the site is abandoned and re-vegetation is complete.

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

3.3 Issues and Concerns Raised during Consultation

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

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

- Will the locals be preferred for every sort of employment – skilled or un-skilled?
- How health & safety of workers will be ensured throughout the construction and operational phase?
- What arrangements will be made for firefighting?
- How water will be conserved?
- How process solid waste and wastewater will be disposed of to not harm the environment?
- How noise levels will not be let increased?

All of these issues were sorted out during the session and recommendations are incorporated in the EIA study. However, most of the concerns were positive as

the proposed industry is believed to provide employment to a lot of local people thus contributing to national GDP. Also, it will bring industrial development in the country at the time when it is already trying to cope up with economic challenges.

3.4 Significant Impacts and Factors to be Determined

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

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

Table 3.2: Criteria for Significance of Impacts

Categories	Impacts	Characteristics
Nature	Direct (D)	The environmental parameters are directly affected by the project construction or operation.
	Indirect (ID)	The environmental factor changes as a result of alteration in another parameter.
Duration of Impact	Short Term (ST)	The impact that last only during the construction of the proposed project e.g. noise from the construction activities.
	Medium Term (MT)	Lasting for a period of few months of a year; the project before naturally returning to the original condition such as loss of vegetation due to clearing of campsite, contamination of soil or water by fuels or oil.
	Long Term (LT)	Lasting for period much greater than medium term impact before naturally reverting to the original condition such as loss of soil due to erosion.
Geographical Extent	-	The geographical extent may be local or regional.
Project Phases	-	Designing (Pre-construction Phase), Construction Phase & Operational Phase
Reversibility of Impact	Temporary (T)	The impacts those don't cross ecosystem threshold value of resilience.
	Permanent (P)	The impacts that exceed ecosystem threshold value of resilience.
Likelihood of the Impact	Likely (L)	Impact will probably occur under most circumstances.
	Unlikely (UL)	Impact could occur at some time
	Possibly (P)	Impact may possibly occur at some time
	Rare (R)	Impact may occur but only under exceptional circumstances.
Impact Consequences Severity	Major (M)	When an activity causes irreversible damage to a unique Environmental feature; causes a decline in abundance or change in distribution over more than one generation of an entire population of species of flora or fauna; has long-term effects (period of years) on socio-economic activities of significance or regional level.

	Moderate (Mo)	When an activity causes long-term (period of years), reversible damage to a unique environmental feature; causes reversible damage or change in abundance or distribution over one generation of a population of flora or fauna; has short-term effects (period of months) on socio-economic activities of significance on regional level.
	Minor (Mi)	When an activity causes short-term reversible damage to an environmental feature; slight reversible damage to a few species of flora or fauna within a population over a short period; has short term effects on socio-economic activities of local significance.
	Negligible (N)	When no measurable damage to physical, socio-economic, or biological environment above the existing level of public concern; and conformance with legislative of statutory requirements.

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

Table 3.3: Significance of the Potential Impacts

Categories	Impacts Significance	Potential Impacts						
		Air Quality Deterioration	Increased Noise Levels	Lowering of Groundwater Table	Surface Water Degradation	Soil Quality	Health & Safety	Flora & Fauna
Nature	Direct (D)	✓	✓			✓	✓	✓
	Indirect (ID)			✓	✓			✓
Duration of Impact	Short Term (ST)		✓				✓	
	Medium Term (MT)	✓				✓		✓
	Long Term (LT)			✓	✓			
Geographical Extent	Local	✓	✓			✓	✓	✓
Project Phases	Regional			✓	✓			
Reversibility of Impact	Temporary (T)	✓	✓		✓	✓	✓	✓
	Permanent (P)			✓				
Likelihood of the Impact	Likely (L)	✓					✓	
	Unlikely (UL)							
	Possibly		✓					✓

	(P)							
	Rare (R)			✓	✓	✓		
Impact Consequences Severity	Major (M)							
	Moderate (Mo)		✓				✓	
	Minor (Mi)	✓		✓				✓
	Negligible (N)				✓	✓		

Based upon this identification; mitigation measures are proposed in EIA study. Environmental Management and Monitoring Plan is prepared defining the monitoring program as well to effectively implement the recommended measures.

Section 4: CONSIDERATION OF ALTERNATIVES

4.1 General

This section covers the project alternatives considered including site alternatives, design / technology alternatives, environmental alternatives & economic alternatives for establishment of the proposed industrial unit sustainable. An analysis of the available alternatives is necessary to establish that the most suitable management and technology options are adopted for the project, while minimizing environmental impacts. This evaluation explains the selection of the most feasible alternative in terms of economics, environment and health & safety. In particular, it outlines the following options that were considered for this project;

4.2 Site Alternatives, their Selection and Rejection Criteria

4.2.1 Selection Criteria

Selection of the site for the proposed industrial plant was governed by many considerations, both the economic analysis of the estimated costs as well as judgment as to the modifying effects of other factors which are more the matter of judgment rather than mathematical calculations, and have considerable effect on the smooth working of the business unit.

The sites were considered for the establishment of proposed unit in and around the Phool Nagar, District Kasur as there is a rapid trend of industrialization in the subject area. In the light of general discussion of the factors influencing the industrial location; the sites were evaluated based upon the following criteria;

Land: Suitability, adequacy, and comparable cost of the sites to install the plant and to expand it whenever feasible.

Labor: Availability and affordable wage rates – taking cost to benefit analysis into consideration – of the skilled, semi-skilled, un-skilled person is required.

Transportation: Regular and sufficient transportation facilities for delivery of materials, dispatch of finished products and for the use of the employees.

Market: Size of the local market and the cost of transporting to central markets vis-a-vis the extent of demand.

Auxiliary Facilities: Character of community regarding taxes, legal regulations, public up lift services, financial facilities, educational opportunities, etc.

In the light of this criteria; it was found most feasible to establish the proposed project industrial unit in subject project area because there is rapid trend of industrialization in this area moreover numbers of industrial units are currently working in this area. The decision was made based upon the following merits:

a. Ex-Textile Mills Building / Site

The proponent of the project has hired the ex-textile mills (Abu Bakar Textile Mills Private Limited) building / site on rent where textile industrial process was being

undertaken in the recent past. After minor alteration and renovation as per requirements in the ex-textile mills building / structure, the structure will be able to utilize for the proposed project as the nature will be same and no major construction / alteration / renovation will be involved. Therefore, the present site is most suitable from business and environmental point of view.

b. Roads and other basic infrastructure:

Basic infrastructure like roads, water, power, telephone, fax, Internet, etc. is available near the project site. Other considerations are the availability of good road facilitates and the movement of raw materials & finished products at cheaper cost. The basic facilities are vitally important for the entire business to be run. These facilities also go in favor of the present site selection for the project siting.

c. Trend of Industrialization in the area

There is rapid trend of industrialization in the subject project area where numbers of industrial units are currently working / located such as Nishat Chunian Textile Mills, Nishat Chunian Coal Power Plan, Tanveer & Brothers Steel Furnace, etc. Moreover, numbers of industrial units are located the proposed project area.

d. Transportation of Raw Materials

The site is located near Main Multan Road, so the transportation of raw materials and finished products is very easy. Therefore, this site is the most suitable.

e. Availability of Manpower

Technical, skilled and unskilled labor is required for construction and operation of the proposed unit. All categories of the labor required for the subject project are available conveniently and plentifully at affordable cost at the present site. This factor also supports the selection of present site for establishment of the unit.

f. Market for the products:

For the marketing of finished products, the market of second largest city of Pakistan, Lahore, is available at a distance of a few Kilometers. In Lahore there are a number of dealers where the demand of these products is very high. Transportation of the products to these markets from this site means a lot of transport charges savings. This positively impacts the profits. Accordingly, the present site is very suitable.

g. Water:

Under ground water is available in large quantities from a depth of about 100 to 150 feet. The underground aquifers are fit for needs of the project. This also favors of the selection of the current site.

h. Environment:

And lastly, environmental considerations are extremely important for factory siting. The project site is situated in the agricultural cum industrial area.

Settings around the project area do not show any sensitivity of environment. The area is agricultural in nature and there are limited species of flora and fauna, mainly cultivated crops are grown up in the agricultural land/fields of area. For more details, refer to the next section wetlands, wildlife or sensitivity of environment.

These factors carried important weightage in selection of the present site for the project. This factor too supports for the selection of the said site. Taking into consideration all the above-described factors the selected site is the most suited for installation of the project.

i. Residential Area / Community Center:

There is no any residential area / community center located near the proposed project site. This also makes the site suitable.

4.2.2 Rejection Criteria

Many alternate sites have been considered which have been rejected due to following reasons:

a) Non availability of basic infrastructure

One of the basic reason to reject the other sites were non availability of basic infrastructure like water / sewerage system, roads network, and other basic infrastructure which is essential for running of project.

b) The site surrounded by or near residential area

Second reason to reject the other alternate sites is surrounded by residential area.

c) Non availability of labour

To run a project man power is basic / major requirement of the project so the others sites were rejected due to non-availability of labor in these areas.

d) Non availability of Electricity / transmission lines in the area

Many sites of those have not even electricity supply in the area.

4.3 Design / Technology Alternatives, their Selection and Rejection Criteria

Selection of plant / machinery technology is the main consideration which may make the project sustainable and environment friendly. So, keeping in view these

considerations most modern and latest state of the art technology machinery for socks knitting and other related equipment will be purchased which will meet the international standards. Therefore, from design and technological point of view best technology will be adopted to safe guard the environment and produce the socks according to international standards.

4.4 Environmental Alternatives, their Selection and Rejection Criteria

During operational phase of the proposed project, no any type of process air emissions containing obnoxious / flue gases will be generated having negative impact on environment and health of workers because knitting of socks will be the major production process.

As far as concerned the generation of liquid waste/wastewater, the wastewater will be produced from dyeing and washing sections which require proper treatment through ETP before its disposal. The main environmental issue from the proposed project is to generation of wastewater. So, the proponent of the project will install ETP/WWTP.

4.4.1 Selection Criteria

The ETP/WWTP for the treatment of wastewater to be produced from the proposed project is selected on the different factors which are as follows:

Compatible / Treating the Wastewater to desired levels

This factor is very much important the ETP/WWTP must be efficient and compatible to treat the process wastewaters to the desired levels as prescribed by PEQS.

Less Bad Odor

Operation of wastewater treatment plants produce bad odor, such type of treatment plants are preferred to select which may produce less bad odor.

Less Sludge Production

Second factor is sludge production, operations of treatment plants also involve sludge generation, handling and disposal in an environment friendly manner. It also requires to construct drying beds or installation of sludge pressing machines. So that type of treatment plant or facility will be selected which may produce low levels of sludge.

Low Operation & Maintenance Cost

Every treatment facility needs operation and maintenance cost, so low operation & maintenance cost treatment plant will be compatible for the subject proposed project.

Low labor cost

Waste water treatment systems usually have a group of people handling the daily operations. So that type of ETP/WWTP would be preferred which requires low levels of group of people.

Low foot prints

A common problem for the proponents of the projects is to allocate large volume of space for installations of ETP/WWTP and tank requirements so low foot print required treatment plants will be selected.

Low need of Digesting Enzymes

In the biological waste water treatment plants dosing of digesting enzymes and chemicals are involved which may add up the cost of daily operations of ETP/WWTP. So low need of digesting enzymes or chemicals type of effluent treatment plant will be selected.

4.4.2 Rejection Criteria

Numbers of factors may play vital role to reject the Waste Water Treatment Plants which are as follows:

Required Large Space

Many types of effluent treatment systems required large foot prints in terms of intensive land use for installation their components specially construction of tanks. So, these types are not compatible the proposed project to install.

High Capital Acquisition

Usually waste water treatment plants require large numbers of electro-mechanical equipment sometimes import from other countries which may not only be high levels of capital acquisition but also required large group of people to handle the daily operations of treatment plant.

Dosing of Chemicals Requirement

Many types of waste water treatment plants have the requirements to add chemicals and digesting enzymes for daily operations which may raise the daily operation cost.

Bad Odor

Many treatment plants operation may produce bad odor those are not compatible with the projects to install.

Large Volume of Sludge Generation

This is also very important factor to consider while selecting the best type of effluent treatment plant which may not produce large quantity of sludge. It will be difficult to handle the large volume of sludge and finally its proper disposal.

High O & M Costs

Those type of treatment plants which may involve large volume of installation of electro-mechanical equipment and dosing of chemicals & digesting enzymes require group of people to handle daily operations having high costs of daily operations. Parallel they also have the high maintenance costs.

4.4.3 ETP / WWTP for the Proposed Project

The wastewater treatment plant which have been selected for the subject proposed project is type of Chemical + Biological Treatment plant like Activated Sludge Treatment Plant. This type of combination of treatment plant is most compatible for the treatment of process wastewaters producing from textile mill (dyeing & washing sections). This type of treatment plants involve the major process including screening, equalization, neutralization, coagulation & Flocculation, aeration, clarification, etc.

4.5 Economic Alternatives, their Selection and Rejection Criteria

Among consideration of alternatives of economic / business, many factors have been considered including investment in hand of owner / proponent, business experience of owner, family / inherited business, etc.

4.5.1 Selection Criteria of Textile Mills (Socks Production Unit)

The current business of socks production has been selected after consideration of many reasons / factors because socks production unit's development required low investment. The owner / proponent has vast experience of said type of business running because his family business. So, all these factors have strong weightage to select the subject proposed business as economic alternative.

4.5.2 Rejection Criteria of other Economic Activities

There are many reasons to reject the other economic activities because of big investment, no experience, etc. the details are as under:

a) Sugar Plant

The Management of the Company was interested investing in a Sugar Plant. A special team of experts were given the task of conducting a study of Investment prospects in Sugar Industry. The management after studying the pros and cons of the project decided to not invest as there was at least an investment requirement of Three to Five Billion Rupees which far exceeded the Budget of the Company. Besides having huge initial investment there were other hurdles like

the Federal Government's policy on issue of License and the Political Hurdles. Environmental pollution load from the sugar industry is also much higher than Socks Manufacturing Unit. Sugar industry has air emission and wastewater problems.

b) Cement Plant

Keeping in view of Lucrative Margins in the Cement Sector with ever rising demand in Construction Industry the Management also conducted a study on the prospects of investment in a Cement Plant. The investment required for the same was also not within the range of the Budgeted Amount allocated by the management, there were hurdles in operating the Cement Plant effectively. Like the Market is highly saturated with Big Players that do not let the new entrants operate in the Market. On the other hand, the company had no prior experience of doing business in this sector. So being a highly risky project management rejected the proposal.

Secondly in cement industry there are significant negative impacts on environment form cement industry operations especially in context of air emissions. Furthermore, mining leases for basic ingredients such as lime stone & clay stone have also a parallel full-time operation/business which is part of cement industry.

c) Car Manufacturing Unit

The fourth business alternative was in an establishment of car manufacturing unit. A study was conducted by the team and the project was thoroughly discussed and rejected due to requirement of huge investment. Further, renowned manufacturing companies are working in the market so there would be no market for new comer.

Section 5: POLICY, LEGAL AND ADMINISTRATIVE FRAMEWORK

5.1 General

This section deals with the current policy as well as legal and administrative framework related to carrying out of Environmental Impact Assessment (EIA) study of various projects.

Like other Projects, the proposed Project, before its execution, is required to go through an Environmental Impact Assessment, in accordance with the provisions of the Punjab Environmental Protection Act, 1997 (Amended 2012).

5.2 Existing Regulations and Legal Framework

This EIA Study has been carried out in the light of the policy guidelines of the Government of Pakistan and Government of Punjab, under the procedures and practices formulated by the Federal / Provincial Environmental Protection Agency (EPA).

5.3 Relevant Legal / Institutional Framework

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

5.3.1 National Conservation Strategy, 1992

On March 1, 1992, the Cabinet of Pakistan approved the National Conservation Strategy. It describes the stark reality of the country's deteriorating resource base and its implications for what is still largely a natural resource-based economy. It sets forth the beginnings of a plan to integrate environmental concerns into virtually every aspect of Pakistani economic life.
The strategy has three overriding objectives: conservation of natural resources, sustainable development, and improved efficiency in the use and management of resources.

5.3.2 PEPO, 1983 and PEPA, 1997

In 1983, the Government of Pakistan issued an Environmental Protection Ordinance (EPO), which has now been replaced by the PEPA, 1997, through an Act of Parliament.

Under Sec. 8 of Environment Protection Ordinance (EPO) 1983, it was necessary to carry out IEE / EIA for all development projects, but there were no IEE / EIA regulations under that ordinance.

Under section 12 of the Pakistan Environmental Protection Act (PEPA, 1997), it is mandatory to carry out an IEE / EIA of all development projects causing significant environmental impacts.

5.3.3 Punjab Environmental Protection Act, 1997 (As Amended 2012)

On 18th April 2012, the Government of Punjab has notified the above mentioned environment act after minor amendments. So the section 12 of the same act is also for obtaining of Environmental Approval. The section 12 is as under:

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

5.3.4 National Environmental Policy 2005

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

5.3.5 (Draft) Punjab Environmental Policy, 2015

The Punjab Environment Policy 2015 provides an overarching framework for addressing the environmental issues facing Punjab, particularly pollution of fresh water bodies, air pollution, lack of proper waste management, deforestation, loss of biodiversity, desertification, water logging, natural disasters and climate change. It also gives directions for addressing the cross sectoral issues, underlying causes of environmental degradation to meet national and international obligations. The theme of the Punjab Environment Policy 2015 is sustainable development in the sense of enhancement of human well being.

The Punjab Environment Policy provides broad guidelines to Provincial Governments and Local Governments for addressing environmental concerns related to them and ensuring effective management, restoration, enhancement of environmental resources and ensuring their sustainable use. The Punjab Environment Policy is a guide for actions in regulatory reform, programmes and projects for environmental conservation; and will review and ensure the enactment of legislation, by Provincial and Local Governments. The policy has been approved by the Punjab Environmental Protection Council headed by the Chief Minister Punjab under Section 4 (b) of the Punjab Environmental Protection Act 1997 (amendment Act 2012) and is enforced with immediate effect.

Goal

The Punjab Environment Policy aims to protect, conserve and restore Punjab environment in order to improve the quality of life of the citizens through sustainable development.

Objectives

The objectives of the Policy are:

a. Protection, conservation, rehabilitation and improvement of the environment, prevention and control of pollution and promotion of sustainable development and efficient management and enhancement of environmental resources.
b. Integration of environmental considerations in policy making and planning processes through environmental governance.
c. Integration of environmental concerns in Economic and Social Development.
d. Capacity building of government agencies and other stakeholders at all levels for better environmental management.
e. Meeting national and international obligations effectively in line with the Provincial aspirations.
f. Creation of a demand for environmental protection through mass awareness and community mobilization.

5.3.6 Punjab Environmental Protection (Review of IEE and EIA Regulations, 2022)

The Government of Punjab has issued Punjab Environmental Protection (Review of Initial Environmental Examination and Environmental Impact Assessment) Regulations, 2022 to review the Initial Environmental Examination (IEE) / Environmental Impact Assessment (EIA) Reports.

5.3.7 Guidelines for the Preparation and Review of Environmental Reports, 1997

The GOP has also framed guidelines for the preparation and review of IEE/EIA of projects in various developmental sectors.

5.3.8 National Environmental Quality Standards (NEQS)

According to PEPA, 1997, National Environmental Quality Standards (NEQS) were established for municipal and industrial effluents and air emissions. The latest revision of NEQS carried out in year 2001 is attached as Annexure to this Report.

5.3.9 Punjab Environmental Quality Standards (PEQS), 2016

Under PEPA, 1997 (as amended 2012), Punjab Environmental Quality Standards including for Municipal & Liquid Industrial Effluents, for Industrial Gaseous Emissions, for Ambient Air, for Drinking Water, for Noise, for Motor Vehicle Exhaust and Noise and for treatment of Liquid & Disposal of Bio-medical Waste have been established since 2016. It is mandatory to comply with these standards.

5.3.10 Guidelines for Sensitive and Critical Areas

GOP has issued Guidelines for Sensitive and Critical Areas in October,

1997. The objective of the guideline is to provide guidance to project proponents and other stakeholders in the environmental assessment process, so that the proposed projects are planned and sited in a way that protects the values of sensitive and critical areas.

5.3.11 Policy and procedures for the Filing, Review and Approval of Environmental Assessments, November-1997

Environmental Assessment is the Primary means of managing the approval of new development proposals in Pakistan. Environmental Assessment allows for the systematic examination of proposals, clear procedures which provide for the interests of relevant Government Departments and other stakeholders to carefully considered.

5.3.12 Guidelines for Public Consultation, Pakistan Environmental Protection Agency October, 1997

This guideline is part of a package of regulations and guidelines which include:

- Punjab Environmental Protection Act, 1997 (As Amended 2012)
- Policy and Procedures for filing, review and approval of environmental assessments
- Guidelines for the preparation and review of Environmental Reports
- Guidelines for sensitive and critical areas
- National Environmental Quality Standards (NEQS)
- Detailed sectoral guidelines

2.3.13 Factories Act, 1934

This act was framed in 1934. The Factories Act, 1934 is still the basic charter for the betterment of labour. Chapter III (Health & Safety) of this act provides guidelines for working conditions including occupational health and safety issues in factories.

5.3.14 Punjab Wildlife Protection Act, 1974

This act was framed in 1974 by the Province Punjab and is about of protection and conservation of Wildlife.

5.3.15 Forest Act, 1927

This act was framed in 1927. The Forest Act, 1927 is still the basic charter for the forest departments in Pakistan. This law empowers provincial governments to manage forest areas.

5.3.16 Explosive Act, 1884

This act deals with explosives in prohibiting either absolutely of subject to conditions, the manufacture, possession or importation of any explosive

which is so dangerous in character that, in the opinion of the appropriate Government, it is expedient for public safety to issue the notification.

5.3.17 Pakistan Penal Code, 1860

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

Section 6: DESCRIPTION OF THE PROJECT

6.1 General

This section of the report depicts the overview of detailed information about proposed project establishment of socks manufacturing unit, objectives of the proposed project, project description, work force, process flow diagram, land use on the site, road access, cost and magnitude of operations, schedule of implementation, restoration and rehabilitation plan, etc.

6.2 Proposed Project

M/s Mima Knit (Pvt.) Ltd. are in the process to establish a socks manufacturing unit at 49-Km Multan Road, Phool Nagar, District Kasur. The capacity of the proposed unit will be 3000 dozen socks per day.

6.3 Objectives of the Project

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

- To establish a latest state of the art technology socks production unit
- To manufacture high quality socks without damaging environment
- To fulfill the national demand for these products
- To provide the employment to the people
- To change the social life style of the area
- To uplift the socio-economic conditions of the area
- Revenue generation for the Government
- To earn profit for the business
- To upgrade the socio-economic conditions of the area

6.4 Location and Site Layout of the Project

The proposed project site is located at 49-Km Multan Road, Phool Nagar, District Kasur. There are numbers of industrial units currently located in the subject project area and also working at both sides of Multan Road in the project area. The site layout and building layout plan of the proposed project are provided in the document's file submitted with the report.

The physical coordinates of the project site is as under:

East: Abu Bakar Textile Mills
West: Vacant Land & Godown
North: Nishat Chunian Ltd.
South Approach Road (Gagga Road) & Agricultural Land

Google Earth Map of the project site / area is as under:


N
31.245201, 73.974999
Nishat Chunian Power Plant
Nishat Chunian Karyana store
Government Office
Nishat Coal Power Plant
Raber Cotton Waste Factory
Sawyed Engineers (EPL)
Vital Agri Nutrients pvt Ltd. Factory
National Battery Industries Pvt
ASIAN CABLES (PVT)
Pak Precise Engineering (Pvt) Ltd. (Unit 4)
Liven Pharmaceuticals Pvt
Abu Bakar Textile Mills
MILLAT INDUSTRIAL PRODUCTS LTD...
Marral Textiles mills lt...
Fawad Textile Mills Limited
TH Robertson Workshop
Saaz God Industries
Google Earth

6.5 Land use on the Site

As mentioned earlier ex-textile mills building/structure has been hired on rent for the proposed project. Currently ex-textile mills building/structure is present on site and required alteration or renovation and installation of machinery will be done after issuance of Environmental Approval.

6.6 Road Access

Approach road (Gagga Road) is metalled road and connected with the Main Multan Road and the site is located at a short distance away from the main Multan Road.

6.7 Vegetation features of the site

The proposed project site is an ex-textile mills and there is no any type of flora including trees, plants, shrubs/herbs and other types of vegetation present at site.

6.8 Cost & Magnitude of Operation

The estimated capital cost of the proposed project is Rs. 422 million.

So far as magnitude of operation is concerned socks manufacturing unit will be developed and socks will be produced.

6.9 Schedule of Implementation

Currently proponent is seeking Environmental Approval from EPA Punjab and construction work (alteration & renovation) will be started after issuance of Environmental Approval.

The various phases involved in the implementation of the project at different levels are given below:

a. Alteration & Renovation

As mentioned earlier, the proponent has rented an ex-textile mills building/structure for the proposed project. So, only alteration and renovation will be done as per requirement and no full-fledged construction is involved.

b. Machinery Purchasing, Transportation & Installation Phase

For purchasing of plant machinery / equipments the vendors will be contacted and agreements will be made for machinery purchasing. The machinery will be transported to the project site and installation will be done. The safety equipment shall also be installed as per requirements and standards. Also, the power supply system will be done. After completion of this phase an application for Confirmation of Compliance (Operational Phase Environmental Approval) will be submitted to EPA.

c. Commissioning Phase

After machinery installation, commissioning phase will start. During this phase, all machinery and associated sections will be operated on trial basis. The machinery and operational procedures will be evaluated for the purpose of quality and efficiency assurance before entering into regular project operations.

d. Operational Phase

After obtaining of Confirmation of Compliance (operational phase Environmental Approval) of the project form EPA Punjab; the operational phase of the project will be started. Regular operations of the proposed project will be started. This phase will continue throughout the project life with modifications and enhancements as per requirement.

6.10 Description of the Project

Project description is given in some detail in the preceding Sections 1 and 3; additional information is provided as under:

6.10.1 Number of Employees

About 15-20 workers / laborers will be required while construction phase (alteration & renovation) of the proposed project and approximately 300 workers will be engaged during regular operational stage of the proposed project.

6.10.2 Electricity Connection & Standby Power Generator(s)

Approximately 2.4 MW of electricity load will be required for the operation of the project. LESCO / WAPDA power transmission lines are available in the proposed project area.

Further, 02 numbers of most modern / latest state of the art and advanced technology standby power generators equipped with sound proof canopy, silencer, smoke arrestor and stack with proper height will also be placed with capacity of 500 KVA each.

6.10.3 Natural Gas Connection / Load

Natural gas will also be required for operations of boiler. Natural gas connection with capacity of 1.2 MMCFD will be sanctioned as SNGPL gas pipelines are available in the project area.

6.10.4 Boiler

One number latest state of the art and advanced technology natural gas fired boiler with capacity of 4 tons/hour will also be placed.

6.10.5 Project Basic Raw Material

Yarn will be the basic raw material for production of socks.

6.10.6 Plant Capacity

The production capacity of the unit will be 3000 dozen socks per day.

6.10.7 Finished Product

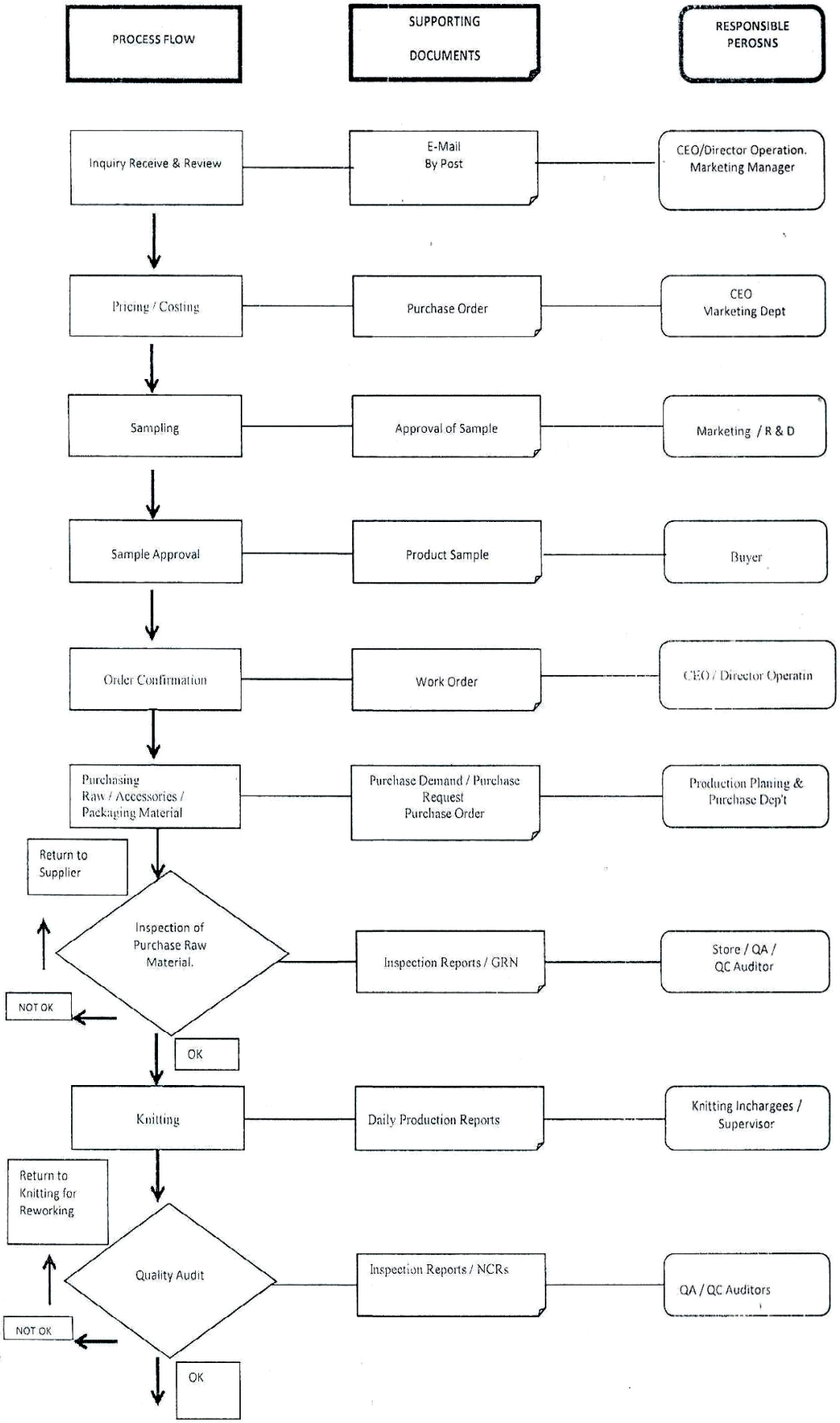
- Socks 3000 Dozen Socks / day

6.10.8 Manufacturing / Production Process Details

The manufacturing / production process details for producing of socks including process flow diagram and process description is as follows;

a. Process Flow Diagram

Detailed process flow diagram of manufacturing process is as under on the next page.


PROCESS FLOW
SUPPORTING DOCUMENTS
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Pricing / Costing
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Marketing / R & D
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QA / QC Auditors
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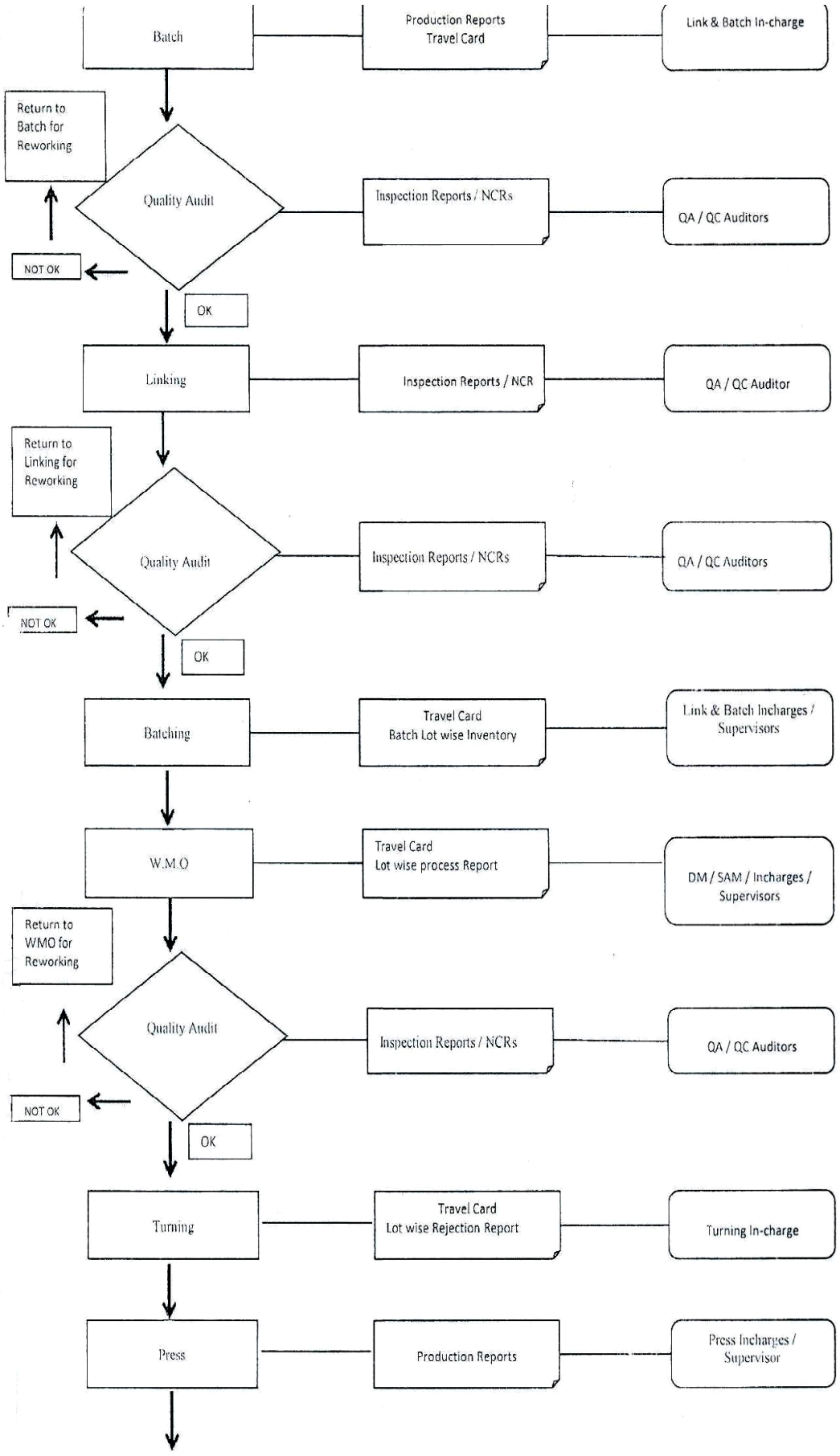
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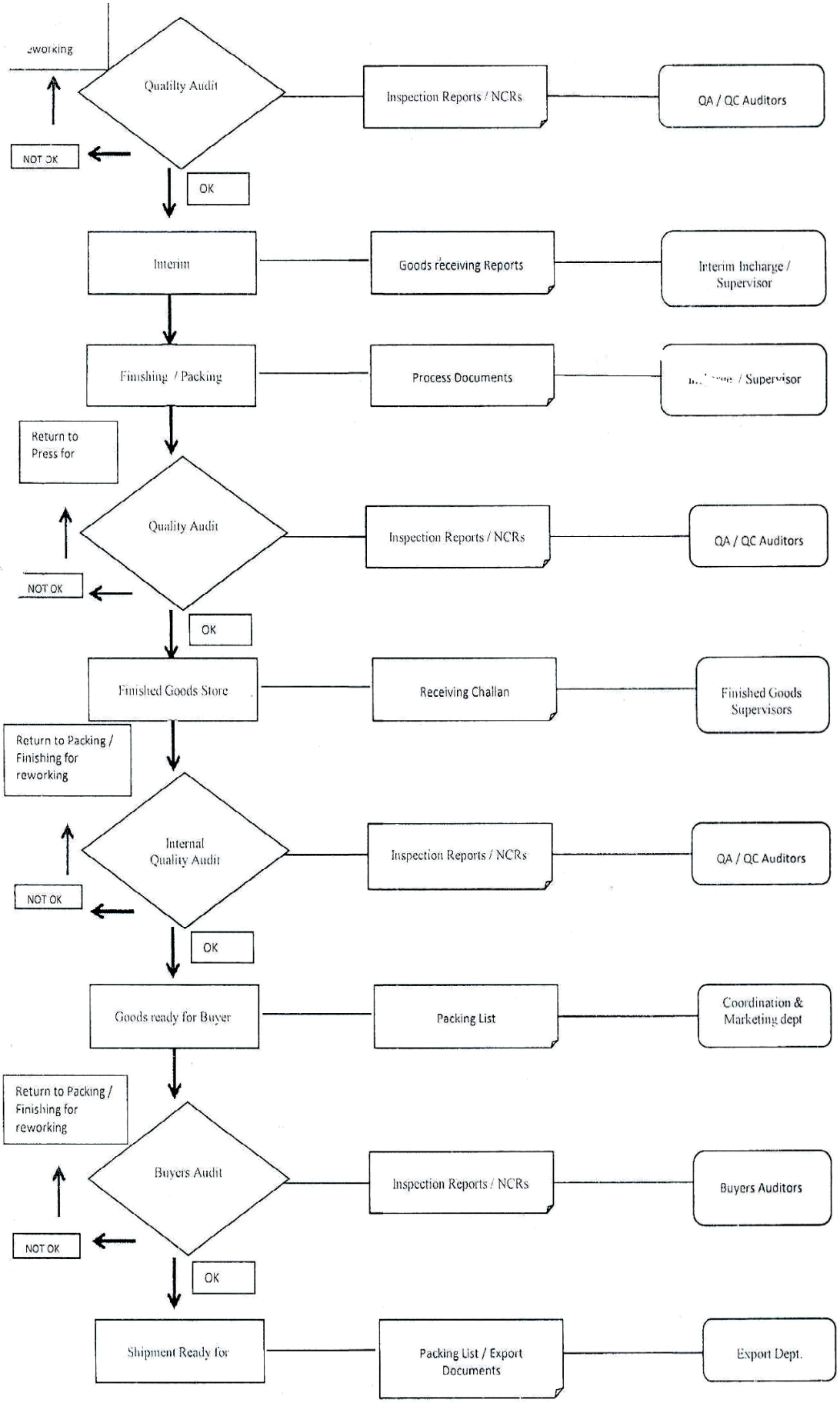
Reworking
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Receiving Challan
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Internal Quality Audit
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Goods ready for Buyer
Packing List
Coordination & Marketing dept
Return to Packing / Finishing for reworking
Buyers Audit
Inspection Reports / NCRs
Buyers Auditors
NOT OK
OK
Shipment Ready for
Packing List / Export Documents
Export Dept.

6.10.9 Water Balance; Water Consumption & its source

During the operational phase of the proposed project, the water will be used in the process (dyeing & washing), washrooms/toilets, kitchen/mess, etc. in quantity of approximately 100,000 gallons/day. The source of water will be underground. Utilization of small quantity of water will not exert any negative impact on underground water sources especially on underground water table. Because the overall nature of the area is agricultural in a broad-spectrum; cultivated lands and irrigational channels are present in the project area. Moreover, grassy lawns will be developed within the mill's / unit's premises. Hence these are the sources to recharge the underground water table.

Water Conservation Strategies:

- At open places the grassy lawns will be developed to recharge the water table which is help to control the surface runoff during rainy season.
- Moreover, landscaping will also be done at available open place after completions of installation phase.
- The overall nature of the area is agricultural, it is also help to recharge the water table.
- The workers will be given training to avoid wastage of water.
- Regular inspection of water tapes, valves and water lines as per schedule or periodically will be undertaken.

6.10.10 Wastewater Generation, its treatment & disposal

During operational phase of the proposed socks manufacturing unit, approximately 60,000 to 70,000 gallons/day of wastewater will be produced from different sources like production (dyeing & washing), toilets / washrooms & kitchen / mess, etc.

Treatment & Disposal:

- Chemical + Biological type of WWTP / ETP with capacity of 100,000 gallons / day will be installed for the treatment of the wastewaters to fulfill the compliance of PEQS.
- After treatment, the treated wastewater will be disposed off into wastewater channel.

6.10.11 Solid Waste Generation & its disposal

During the operational phase of the subject proposed project, no any type of hazardous nature solid waste will be produced. Recyclable nature (non-hazardous waste) including yarn corn, lose thread, empty carton, packaging waste, polythene bags, wood, etc. will be produced. Moreover, organic waste will also be produced from kitchen/mess.

Disposal:

- The recyclable waste including yarn corn, lose thread, empty carton,

packaging waste, polythene bags, wood, etc. will be handed over to EPA Approved waste contractor.
- Organic waste to be produced from kitchen / will be handed over to mess contractor who then will dispose off properly as per local Govt. policy like MSW wastes.
- A track record of solid waste will be maintained.

6.11 Details of Restoration and Rehabilitation Plans at the end to the Project Life

The estimated life of the first phase of the project is 25 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 the prevailing environmental management laws and controls so as to avoid any damage to any segment of environment or human health around the project site.

Rehabilitation would not be required as such or at a significant level at current project site, however, restoration plans to be practiced during different phases of the project at various levels are illustrated hereunder:

a. Pre-Construction Phase

The proponent of the project either will take necessary measures regarding restoration plan by himself or shall pay charges to the contractor and / or concerned line departments regarding the restoration of the relevant areas disturbed during clearing of the site and its preparation prior to the construction of building parts and development of infrastructure.

b. Construction Phase (Alteration / Renovation)

The project proponent shall keep eye on the alteration / renovation activities through its authorized officer, will exercise continuous vigilance and inspection any time during execution of work or any time after completion. Only approved structural designs shall be erected. Moreover, the proponent will provide copy of EIA Report and Environmental Approval to the construction contractor to implement measures and also done working as per EMP and conditions of approval. After completion of the project the proponent / contractor will restore the site especially disturbed areas and develop landscaping at available open places.

6.12 Govt. Approvals and Leases Required by the Project

So far as concerned the Government Approvals / NOCs, the Environmental Approval from the EPA, Punjab, Lahore is the major requirement. However, the proponent will also obtain relevant NOCs / approvals / permissions from other concerned departments like District Council/Local Council/TMA and get registered with SECP, FBR, PRA, Industries Department, etc. as per legal requirements.

Section 7: DESCRIPTION OF ENVIRONMENT

7.1 General

This section of EIA Study describes the baseline environmental conditions, which cover the existing environment including its dimensions physical, biological/ecological and socio-economic environment of the project site as well as project area & District Kasur. Data was collected by reviewing secondary data from different universities research articles and publications, Governmental department studies, Non-Governmental organization reports and primary data was collected from the field visit and survey at different timed intervals.

7.2 Baseline Physical Environment

Following is a brief description of various physical resources of the Project Site.

7.2.1 Topography

Pakistan lying in the northwestern part of the Southern Asian Subcontinent, occupies the western end of the Indo-Genetic Plain, which is beyond bounded in the north by mountain wall of the Great Himalayas and their off shoots. Physiology of the earth is description of the behavior of the upper crust. Accordingly, some knowledge of the geology is desirable.

This Plain, where the project site is located, is composed of major tributaries of Indus River - Jehlum, Chenab, Ravi, and Sutlaj. The land between Ravi and old course of Beas River is called Ganjibar while the area of 7.2 million acres and occupies districts of Lahore, **Kasur,** Okara, Sahiwal, Pakpattan, Vehari, Khanewal, Multan, and Lodhran. The topography of the area is of Cover Flood Plain and scalloped interfluves composed of fertile alkaline soils. The Project Site is almost flat.

Topography of Project Area:

The proposed project area is flat agricultural in nature and which has a depression of 2 meter to 3 meter and is at an elevation of 200 meter above the sea level.

7.2.2 Soils

Soils form major part of environment; their fertility and other special characteristics have great relationship with environment. Climate has great influence on the formation of soils; therefore, study of these factors is of great importance. Soil is a dynamic layer in which many complex physical chemical and biological activities are taking place. Therefore, soil is a dynamic changing body.

Soil scientists restrict the word soil or solum to the surface materials, which over the ages have adopted the distinctive layers or horizon. Soils are made up of solids, liquids and gases. The solid part of the soil is made up of both inorganics

and organics. While weathering of rocks make inorganic particles, the organic solids consist of living and decayed plants. In order to classify the entire soils in Pakistan, the Soil Survey of Pakistan has divided the entire country into nine ecological zones.

Soils in the project area (Kasur District) are uniform in texture, formed of old alluvium or Aeolian in origin. There are three basic classifications in the area:

a) The first soil unit of brown silty clay/lean clay forms the top soil cover at the site at all locations and generally continues to a depth of 1.0 m to 3.5 m below of ground. This stratum contains trace fine sand and trace to little concretions at places. It is present in a soft to a stiff state of consistency and has low to medium plasticity.
b) The second soil unit of brownish grey sandy silt/silt underlies the upper Silty clay/lean clay stratum. This layer has thickness of 1.0 to 3.0 m and is present in a firm state.
c) The third soil unit of brownish grey non-plastic fine silty sand underlies the silt/Silty sand stratum. It is present is a loose to medium-dense state.

These soils are often low in nitrogen and phosphorus. The soils are deep but may show marked stratification of sands, clay, and loam. The vegetation carried by these soils is influenced by moisture and aeration.

Soils of Project Area:

The soil of the project area is fertile. Maize, rice, sugar cane, wheat, etc. are the major crops. Rice is also sown to reasonable extent where water is available in abundance. However, tobacco, vegetables, pulses legumes and fodder are the other crops.

7.2.3 Seismology

The area where the proposed project is situated falls in Zone 2A according to Seismic Zoning Map of Pakistan (Seismic Provisions 2007) i.e. minor damage zone corresponding to intensity V and VI of the modified Mercalli Intensity Scale. In this zone distant earthquakes with fundamental periods greater than 1.0 second may cause damage to structures. Figure 4.1 shows the seismic zoning map of Pakistan.

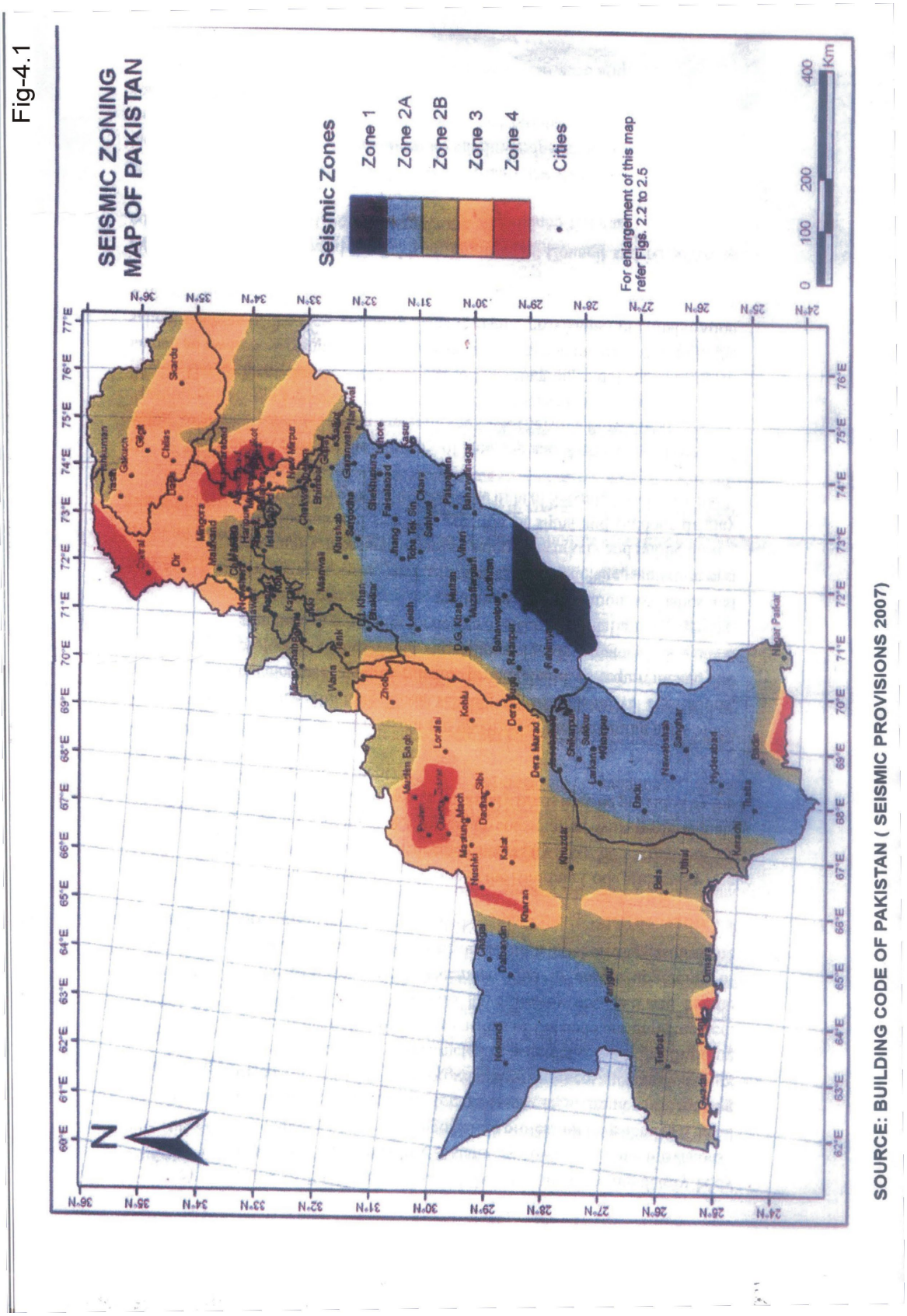


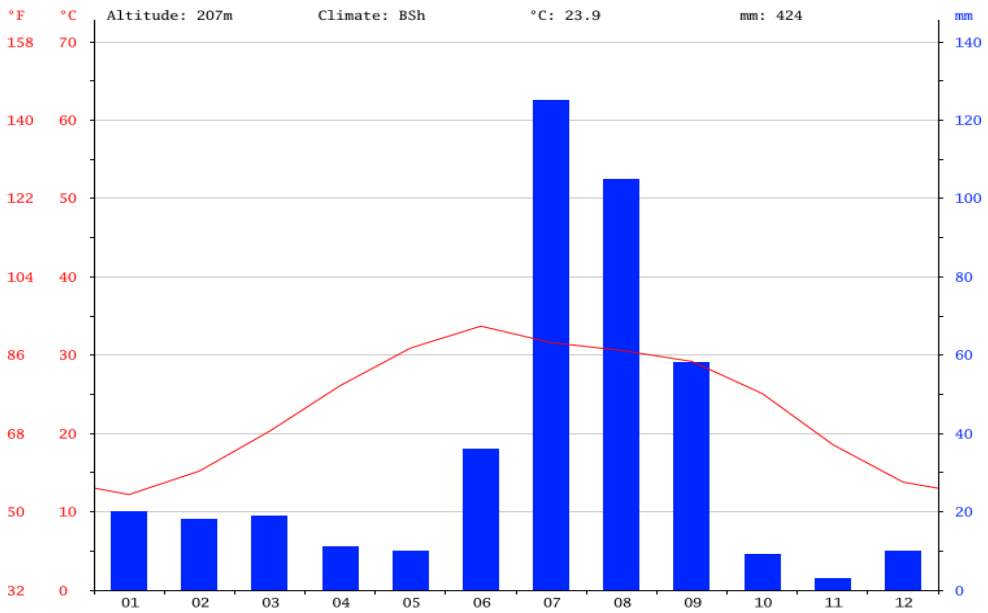
Figure 7.1: Shows the Seismic Zoning Map of Pakistan

7.2.4 Climate

Pakistan's latitudinal and longitudinal extents and its northern rim of lofty mountains are the two factors having great bearing not only on temperature and rainfall patterns, but also on general circulation of the atmosphere in South Asia. As per widely-used climate classification system developed by Wladimir koppen, Pakistan has five types of climate. The first type is tropical semi-arid with dry winter, which prevails in the former Karachi, Hyderabad and Southern Khairpur divisions. Mean annual temperature is above 18°C. tropical arid climate characterized by average annual temperature of about 18°C with dry winters is experienced in southern Kalat and the whole Indus Plain. The Cold Semi-arid with Dry summer climate type prevails over Central Kashmir, Peshawar, Dera Ismail Khan, Quetta and northern half of the former Kalat Division. Snow Forest Climate is characterized by average temperature of coldest month below 3°C. mean temperature of the warmest month is between 9°C and 21°C. this climate covers the northern mountainous areas and parts of Kashmir. Finally, the extreme cold climate, with average temperature of the warmest months between 10°C and 0°C, is experienced in eastern and northern parts of Kashmir, Chitral and Northern Areas.

Climate of Project Area:

The proposed project area (Phool Nagar, District Kasur) falls under Tropical Arid climate zone where intense summer heat and cold weather are experienced.



Graph 4.1: Climate Conditions

7.2.5 Seasons

There are four well-marked seasons in the country. The cold season (December to March) is influenced by frequent passing of western disturbances originating over the Mediterranean and Western Europe. The cyclones advance eastward over Saudi Arabia, Iran, Afghanistan and then to Pakistan. The mean monthly temperature is below 4.4°C in the mountainous areas, and varies from about 10°C in the north of the plains to about 18°C in South. Rainfall during this period increases northwards and westwards. The hot season (April to June) sees high temperatures and aridity. The temperature begins to rise and peaks in June from 40°C to 46°C, while temperatures of 50°C and above are not uncommon. Areas along the Sindh-Makran Coast are under the influence of a sea breeze, which keeps the maximum temperature down to about 35°C. Relative humidity is low, and rainfall is meager, between 27 mm and 76 mm in the plains and increasing along the sub-mountain areas.

The monsoon season (July to September) is caused by low pressure over the Indo-Pakistan subcontinent in May and June, attracting winds from the Indian Ocean, which start blowing over the land about middle of June, as the south-west monsoons. Changes in the structure of the upper air during this seasons allow further invasion of moist air from the Bay of Bengal in July. This period experiences periods of heavy rains and storms. The monsoon spreads northwards, generally in a series of pulses. It reaches the Punjab by early of mid – July. Sindh and Balochistan never come under the regular sway of the moist currents, but are affected by occasional monsoon incursions in July and August. The Sub-Himalayan region receives the highest amount of rainfall. The monsoon currents remain steady in July, mostly constant to the middle of August, and begin to recede at the end of August. However, the monsoons continue to be active even in September when some of the highest floods have been recorded in the Indus Basin.

The post monsoon season (October to November) is basically transitory. Maximum temperature in October varies from 33°C to 36°C over much of the country, while nights are fairly cool. The maximum and minimum temperatures fall by about 6°C in November and the weather becomes pleasant. October and November are by far the driest months on account of anti-cyclonic conditions, and are characterized by clear skies, and light and variable winds all over the plains of Pakistan.

Seasons of Project Area:

The proposed project area experiences extremes of climate. The summer season starts in April and continues till September. The hottest months are May, June and July. The mean maximum and minimum temperatures during these months vary between 41 °C and 27.4 °C. The winter season lasts from November to March. The coldest months are December, January and February with a minimum temperature reaching up to freezing point. The mean maximum and minimum temperatures for this period are 22 °C and 5.9 °C respectively.

Following table **(Table 4.1)** shows minimum and maximum temperature &

precipitation:

Table 7.1: Month wise Temperature, Precipitation and Relative Humidity

	January	February	March	April	May	June	July	August	September	October	November	December
Avg. Temperature (°C)	12.2	15.2	20.3	26.1	30.9	33.7	31.6	30.6	29.2	25.1	18.6	13.8
Min. Temperature (°C)	5.1	7.7	12.8	17.9	22.7	26.7	26.7	26.1	23.7	17.3	10	6
Max. Temperature (°C)	19.3	22.8	27.9	34.4	39.2	40.8	36.5	35.2	34.8	33	27.3	21.7
Avg. Temperature (°F)	54.0	59.4	68.5	79.0	87.6	92.7	88.9	87.1	84.6	77.2	65.5	56.8
Min. Temperature (°F)	41.2	45.9	55.0	64.2	72.9	80.1	80.1	79.0	74.7	63.1	50.0	42.8
Max. Temperature (°F)	66.7	73.0	82.2	93.9	102.6	105.4	97.7	95.4	94.6	91.4	81.1	71.1
Precipitation / Rainfall (mm)	20	18	19	11	10	36	125	105	58	9	3	10

Between the driest and wettest months, the difference in precipitation is 122 mm. The variation in temperatures throughout the year is 21.5 °C.

7.2.6 Temperature

The proposed project area experiences extremes of climate. The summer season starts in April and continues till September. The hottest months are May, June and July. The mean maximum and minimum temperatures during these months vary between 41 °C and 27.4 °C. The winter season lasts from November to March. The coldest months are December, January and February with a minimum temperature reaching up to freezing point. The mean maximum and minimum temperatures for this period are 22 °C and 5.9 °C respectively.

7.2.7 Humidity

Relative humidity throughout the day is higher in winter than in summer months. May and June are very hot and dry during which dust storms occur occasionally. Towards the end of June or beginning of July, the monsoon season starts, which is characterized by heavy down pour and humid sultry weather. It practically becomes oppressive in July, August and September.

7.2.8 Rainfall

Rainfall varies from year to year also from month to month. Maximum rainfall however, occurs in July and August when the monsoon depression travels westward.

7.2.9 Wind Speed and Wind Direction

Winter months are mostly calm with minimum windstorms. Windstorms are more common during the month of April to July with maximum occurrence recorded in June when low air pressures are developed due to high temperature. In winter, the wind mainly blows from North - West while in summer it is from opposite direction i.e. from South - East which brings the Monsoon rains. The predominant wind direction in Kasur is north - West and during Monsoon season it is south - east.

7.2.10 Hydrology; Surface and Ground Water

The area is fed with canal water. However, tube wells are also the source of irrigation. At the project site and around, the underground water is sweet and used for irrigation and drinking, among other purposes.

There is no lake and river near the project site. The canal water comes through system under the Sindh Tass Agreement between Pakistan and India.

7.3 Baseline Ecological Environment

Ecological resources including fisheries, aquatic biology, wildlife, forests, rare or endangered species of the project area has been discussed in details as follows:

7.3.1 Fishery and Aquatic Biology

There is no source of fishery in the project area. Neither there are any fish farms around the proposed project site. There is no river, canal and other water body flowing in the proximity of the project area. So, there is nothing sort of aquatic biology in the context of the project area.

7.3.2 Biodiversity

Natural capital of a country mainly includes all of a country's wilderness areas and scenic landscapes, including the associated flora and fauna. Pakistan has a total of nine major ecological zones. The contribution of the "Natural capital" is recognized at three distinct levels: species, genera, and communities (habitat and ecosystem). Both collectively and within each level, the range or variety of the resources is referred to as the Biological Diversity". The term has relevance for each of Pakistan's administrative units-district, province, and particularly country. The more the number of species, genera and habitats and ecosystems present within these units, the greater is said to be the Biodiversity. The biodiversity of the area, with this background, is discussed as under:

7.3.3 Forestry

Up to very large distances there is no forest of any nature. The entire area is irrigated and agriculture boom is there.

7.3.4 Wildlife

The project site is situated near the agriculture lands. Natural habitat conducive to wildlife to flourish is nowhere up to long distances. Consequently, there is no wildlife in the true sense in the area. However, some common native animals, reptiles and birds (both captive and non-captive) like buffaloes, cows, goats, sheep, camels and donkeys (in very small number), cats, dogs, hare, pigs and jackals (very few), lizards, snakes, wild rats, Goh (iguana), crows, doves, sparrows, quails (seasonal), and pigeons and snakes, rats and lizards are found.

7.3.5 Flora

The proposed project area is situated in agricultural zone at project site presently no any type of vegetation or flora is existed.

However, the vegetative resources around the proposed site of the project are cultivated crops as wheat, sugar cane, cotton, rice, maize, tobacco, Legumes and pulses.

The trees surrounding the project area are in the fields Kikar (Acacia Arbica), Shisham (Dalbergia Sissoo), Bohar (Ficus Inclica), Pipal (Ficus Religiosa), Mulberry (Mourusalba), Aam (Mangiferra indica), Siris (Albizzia lebbek), Jamolan (Engenia Jambolana, amaltas (cassia amaltas), lasura (teccoma Unclulata), Kikar and shisham trees. They are the most useful and provide hard wood for construction, agriculture implements manufacturing and for a variety of many other purposes like especially furniture manufacturing. They are sold at very high price.

7.3.6 Fauna

In and around the project area domesticated and wild animals and birds include buffaloes, cows, goats, sheep, camels and donkeys (in very small number), cats, dogs, hare, pigs and jackals (very few), snakes, wild rats, Goh (iguana), crows, doves, sparrows, quails (seasonal), pigeons, snakes, rats and lizards.

7.4 Baseline Socioeconomic Environment

Detailed description of Socio-economic environment of the proposed project are as under:

7.4.1 Socioeconomic Values

The project site is situated in the rural setting. Virtually entire land is under agriculture use. Modern agriculture implements like tractors and Tractor trolleys are in use. These are owned by a few well to do persons and are provided on rent. Majority of the people depend upon agriculture as their main source of life support system.

Most of the people belong to mid economic order. There is a fairly large cross section of poor people. A large proportion of the people are poor. While a small

percentage of the residents are living little above the poverty line. The population of the area is undergoing transformation in almost all walks of life i.e. socioeconomic and cultural. Old traditions are being replaced by new social order under the influence of electronic and print media. Elders are the most respected segment of society. They even now have great say in decision making.

Inspite of transition, old customs and traditions are still surviving in the society. Arranged marriage system is followed and it is quite successful. People are proud of their traditions and customs inspite of a change. Joint family system is intact in most of the cases. Families are quite coherent. People are very hospitable specially to aliens. However, lifelong old traditional enmities are also going side by side. Sometimes a lot of money is wasted on disputes on very minor disputes.

Due to awareness about the importance of education, most of the younger generation, including both sexes, is now enamored of the values of education are struggling to get education. There is a rising trend in the society to change their old traditional socioeconomic pattern of life.

7.4.2 Population and communities

The project site is located at Kot Radha Kishan Road which is linked with main Multan Road at a distance of 1-Km away from the site. Population/communities centers and project site is not located close to one and other.

7.4.3 Industries

There are number of industrial units are located in the closed vicinity of the unit or in the subject proposed project area such as Abu Bakar Textile Mills, Millat Industrial Products Ltd., Marral Textiles Mills, Liven Pharmaceuticals Pvt. Ltd. National Batteries Industries Pvt. Ltd., Pak Precise Engineering Pvt. Ltd., Kasmy Pack Pvt. Ltd., Vital Agri Nutrients Pvt. Ltd., Nishat Coal Power Plant, Nishat Chunian Power Plant, Saritow Spinning Mills, Quetta Textile Mills, Nishat Chunian Ltd. BBJ Pipe Industries, Pakistan Tiles Pvt. Ltd.

Moreover, there is rapid trend of industrialization in the area especially at both sides of the Multan Road.

7.4.4 Infrastructure

Electricity from the WAPDA grid station is available in the project area. There is a network of roads in the entire area. Private buses and wagons are available as public transport. Underground water of good quality suitable for drinking and irrigation is available from shallow depth.

7.4.5 Educational Institutions

In most of the villages primary and high schools are available both for girls and boys. For intermediate and graduate level education, students have to travel mostly to Phool Nagar or Kasur City, the District Head Quarter of the area.

The Government Hospitals at Phool Nagar and Kasur City provide health care to the people under the scheme of the Government of the Punjab.

7.4.6 Transportation: roads, rail, airports, navigable rivers

There is a vast network of roads connecting the proposed project to market. Virtually most of the villages are connected with each other through these roads. The project is located at Multan Road.

7.4.7 Land use planning

The project site is situated in the agricultural zone. The entire land use planning is carried out according to the provincial laws. Under the present Government system, the District Government is responsible for all land use planning.

7.4.8 Power sources and transmission

Water and Power Development Authority (WAPDA) controlled by Lahore Electric Supply Company (LESCO) provides electricity to the propose project area. Transmission of power is through overhead electric transmission lines.

7.4.9 Agricultural and mineral development

The project area lies in the agricultural zone. Land holdings are very small. Agriculture mainly depends upon canal water. Underground water, where available of irrigation quality, is used for agriculture purpose through tube wells.

7.4.10 Public Health / Health Facilities

Though some villages have some type and level of medical treatment facility, yet by and large it is quite in adequate as compared to the required level.

7.4.11 Recreational Resources and Development

There are no recreational resources and activity in the near proximity of the proposed project area.

7.4.12 Cultural and Esthetic Values

Though cultural and aesthetic values are in the transitional stage towards modern ones, yet old traditional cultural and aesthetic values are over power these changes. Old customs are the integral part of the day-to-day life. It will take very long time to see a tangible change in the old customs, virtues, and rituals.

There is large number of people living life below poverty line. Media is playing some role to bring change in the traditional aesthetic values presently prevailing among a large cross section of the society. A tangible change is appearing among a very small cross section of the society who is trying to pursue the modem aesthetic values of life.

Financial and religious factors influence aesthetic and culture values of the society. People religiously have strong commitment to Islam. This relation contributes to good aesthetic and cultural values among the people.

7.4.13 Archeological and Historic Treasure

There is no worth mentioning archeological and historic treasures in the vicinity of the project area.

7.5 Environmental Conditions

Environmental conditions of the proposed project area including ambient air quality & noise levels are as under:

7.5.1 Air Quality

The proposed project site is located in the agricultural area however many industries are also located around the project site. The setup of the entire area is rural so the air quality is good. Whereas, PM_{10} & $PM_{2.5}$ are slightly high because of overall high in air quality index in Pakistan.

7.5.2 Noise level

Noise levels at the project site and around the project area is less than within the permissible limits of Punjab Environmental Quality Standards (PEQS). Because of the entire area, where the proposed site is located, is a rural setup and there is no such noisy operation/activity that causes noise pollution.

7.6 Lab Reports of Environmental Analyses

Lab Reports of Environmental Analyses / Lab reports of Environmental Monitoring including ambient air quality, groundwater quality and noise level monitoring from EPA certified lab monitoring are attached at the end of this EIA Study as appendices.

7.7 Suitability of the Site

Site selection is very important because site should not be prohibited, environmentally sensitive, incompatible to surroundings and unsuitable. Following factors have been considered while site selection:

- **Not Prohibited**

The site is not located in the prohibited area or no any type of notification has been issued by the Government as the area is prohibited for establishment of the industrial setup Moreover, the proposed project site is ex-textile mills premises.

- **Environmentally Sensitive Areas**

Environmentally sensitive localities don’t exist in the project area as mentioned

above site is located in self developed industrial area that is situated at Multan Road.

- **Incompatible to Surroundings & Unsuitable**

As mentioned earlier, the subject proposed project site is ex-textile mills premises where industrial activity was already used to undertake, moreover there are numbers of industrial units are located in the area hence the proposed project is not incompatible to surroundings & unsuitable.

- **Land use Planning:**

Ex-textile mills building / structure is present at site as mentioned already. The entire land use planning is carried out according to the provincial laws. Under the present Government system, the District Government is responsible for all land use planning.

- **Presence of Hazardous Conditions**

The site is free of any natural and anthropogenic hazardous conditions.

- **Availability of Essential Services / Utilities**

Essential services / utilities which are basic requirement to run the project like Electricity Supply, Gas Supply, Water Supply, Sanitation System have been well served in the project area.

- **Basic / Communication Infrastructure**

Basic infrastructures like road networks are present near the site and or in and around the project area.

- **Availability of Construction Materials**

The contractors provide the construction materials like cement, steel, crush and bricks at the site on as required basis or these are procured by the proponent. All these materials are available locally.

- **Skilled and Unskilled Labor**

The people are available at economical rates all the time. The project will provide jobs to the local residents as well as those from suburban areas.

Section 8: IMPACT ASSESSMENT

8.1 Assessment of Impacts

The primary function of an environmental impact assessment study is to predict and quantify the magnitude of potential impacts, assess and evaluate the magnitude. The impact assessment forms the basis for development of Environmental Management Plan. Environmental impacts could be positive of negative, direct or indirect, local or regional and also reversible or irreversible.

8.2 Identification of all impacts

All the potential environmental impacts had been identified during literature review, visits of project site and nature / manufacturing process of the proposed project. Various types of environmental issues likely to crop up during life cycle of project are grouped in different phases; project location related impacts, project design related impacts, construction phase impacts and operational phase impacts.

8.3 Methodologies for Impacts Identifications

Methodologies for impacts identifications are including checklists, matrices, networks, overlays and GIS & Computer expert system. The details of methodologies for impact identifications are as under:

a. Checklist

Project impact evaluation checklist have also been developed to identify the potential environmental impacts while the proposed project's various phases including design phase, construction phase and operational phase. These impacts have been categorized as follows:

- None
- Minor
- Medium
- Major

Table 8.1: Project Impact Evaluation Checklist

Potential Impacts	Possible Risk / Damage to Environment	Mitigation Measures	Significance of Impact			
			None	Minor	Medium	Major
A. Potential Environmental Impacts Relating to Design Phase						
a. Physical Environment						
Changes in Land Appearance	No significant change in land appearance	Beautiful landscaping will be done	X			
Seismic Hazard	Damage due to earthquake	To design the building in such a way to moderate large scale				X

		earthquake				
Emergency Response	Damage due to emergency situation fire, earthquake, etc.	To design the building in such a way which incorporates emergency exits				X
b. Ecological Environment						
Impacts on Flora	Construction activity may affect the flora	Site selection and designing of additional structure will be done to avoid tree cutting or other type of flora		X		
Impacts on Fauna	Fauna (wild birds) may be disturbed from project	Planning of construction activities (alteration & renovation) and operation of the project in such a way to avoid disturbance to fauna at design / planning phase		X		
B. Potential Environmental Impacts Relating to Construction Phase						
a. Physical Environment						
Impacts on Air Quality	Negligible change may occur in ambient air quality due to construction activities (alteration or renovation)	Regular ambient air monitoring plan Regular water sprinkling Maintenance of construction machinery		X		
Disposal of Construction Waste	Construction solid waste from construction activities may be haphazard	Utilization of construction solid waste within project site as earth fill work Transportation of muck material in covered loaders		X		
b. Ecological Environment						
Impacts on Flora	Construction activity may not impose some impacts on flora	To avoid any negative impact on flora	X			
Impacts on Fauna	No any type of impact on fauna	To avoid any disturbance to fauna	X			
c. Socio-Economic Environment						
Health & Safety of	Construction activities can	Training of workers Regular checks to			X	

Workers	impose certain negative impact on health & safety of workers	ensure that contractor is following safety measures Provision of PPEs				
C. Potential Environmental Impacts Relating to Operational Phase						
a. Physical Environment						
Impacts on Air Quality	Deterioration of air due to stack emissions	Development of air quality monitoring & improvement plan Installation of safety devices on stacks Maintenance & overhauling of standby power generators		X		
Noise Pollution	Nuisance due to noise pollution	Development of noise level monitoring & improvement plan Construction of proper foundations for machines Maintenance & overhauling of standby power generators and others machines.		X		
Water Consumption	Insignificant impact on water table	Training or workers to conserve the water Regular inspection of water tapes, valves and water supply lines	X			
Wastewater Generation	Damage to the environment due to process wastewater	Treatment through ETP to comply with PEQS before final disposal			X	
Solid waste generation	Indiscriminate disposal may be haphazard and damage to the environment	Proper disposal of solid waste as per requirement and record keeping			X	
Emergency response	Severe damage due to emergency situation	Development of comprehensive Emergency Response Plan Arrangements of firefighting equipments				X
b. Ecological Environment						

Impacts on Flora	Insignificant on Flora	Beautiful landscaping will be done	X			
Impacts on Fauna	Operation of project may have minor impact on fauna	Beautiful landscaping will be done Noise level monitoring		X		
c. Socio-economic Environment						
Health & safety of workers	Risk of safety & health of workers	Job specific training of workers Regular monitoring & inspection of health & safety measures Provision of PPEs			X	

b. Matrix

The impact evaluation matrix was developed and different environmental parameters likely to be affected by the proposed project actions grouped into categories i.e. Physical Environment, Ecological Environment and Socio-economic Environment. For the impact assessment, project impact assessment matrix is used by dividing the project action into different phases such as Design Phase, Construction Phase and Operational Phase. Impact evaluation matrix with suitable mitigation measures is attached at the end of this section in Table 8.2.

8.4 Impact Analysis and Prediction

In order to give correct categorization to the present project Rapid Environmental Assessment Procedure was followed. It revealed that there some major impacts of the project have identified which will be controlled by adopting proper mitigation measures. These impacts are mainly attributed to the generation of stack emissions, wastewater and solid waste while operational phase of the proposed project but most of the impacts are projected as moderate/minor impacts although project has many positive impacts on local public and economy. M/s Mima Knit (Pvt.) Ltd. will install latest state of the art imported technology and adopt proper standards operating procedures to carry out the operation in environment friendly manner.

Meetings:

For the impact analysis and predictions detailed meetings were held with the proponent/management of M/s Mima Knit (Pvt.) Ltd. and with other stakeholders. Issues were discussed that may affect the environment and also the implementation of proposed project. All possible mitigation measures were considered and incorporated in the Environmental Management Plan.

Consultations

Scoping sessions, focused group discussion and way side consultations were

held with the relevant stakeholders, inhabitants of the villages, shopkeepers and workers in the area. The purpose of such consultations is to obtain the feedback from the relevant persons. The environmental issues have been identified during literature review, consultation with stakeholders, relevant reports and visits to project site.

8.5 Characteristics of Impacts

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

- **Nature of Impact**

  Nature of impact; Direct or Indirect

- **Magnitude or degree of impact**

  Size or Scale (whether large or small scale)

- **Extent and Location of Impact**

  Point or degree (local or widespread)
  Location (On-site or Off-site)

- **Timing of Impact**

  Timing of impact (during construction or after construction/during operational)

- **Duration of Impact**

  Duration of impact (short-term, mid-term or long-term)

- **Likelihood of impact**

  Likelihood of impact occurrence (Certain, Likely, Unlikely)

- **Reversibility of Impact**

  Reversibility of impact (reversible or irreversible)
  Reversibility (Possible or How)

- **Sustainability of Impact**

  Mitigability (fully, partially)
  Monitoring (fully, partially)

- **Impact Consequence Severity**

  Impact consequence severity (severe, moderate, mild)

- **Signification of Impact**

  High, Medium, Low

8.6 Impact Significance

Impacts significance has been evaluated on the basis of none, minor, medium and major which are enlisted in project impact evaluation checklist. The impacts have been evaluated so that the nature, magnitude, extent & location, timing, duration, reversibility and risk could be clarified either some are acceptable and other might be mitigated with suitable protection measures so that those would be eliminated or minimized to an acceptable level as prescribed in PEQS.

All the impacts have been studied while different phase of the project design phase, during construction stage and during operational phase thoroughly and suitable mitigation measures have also been suggested.

a. Ecological Importance:

The impacts relating to the ecological environment such as flora & fauna, concern & importance of these impacts and suggestion of suitable mitigation measures have been done while all three phases of the proposed project including design phase, during construction stage & during operational phase at next pages of this section. However, the impacts relating to ecological environment are acceptable and the significance of these impacts is minor scale.

b. Social Importance:

The impacts which are linked with socio-economic environment including employment generation, changes in land value, uplift in socio-economic conditions of the area, tax/revenue generation and health & safety of workers and importance of these impacts have also been discussed while various stages of the proposed project including design phase, during construction stage & during operational phase at next pages of this section. The impacts regarding socio-economic environment are vitally important and having positive nature.

c. Environmental Standards:

Environmental standards such as Punjab Environmental Quality Standards (PEQS) / Pakistan Environmental Quality Standards (NEQS) will be monitored and complied with letter & spirit. Monitoring will be done throughout project lifecycle while both construction phase and operational phase. The monitoring of different parameters including air/stack emissions, noise levels, ground/drinking water quality and wastewater quality will be done as per requirement.

8.7 Mitigation and Impact Assessment

Mitigation and impact assessment have been done on the following criteria:

8.7.1 Mitigation & Impact Assessment Criteria

a. Impact Assessment Criteria:

The impacts were assessed in the light of criteria give as under:-

- Magnitude or degree
- Time and duration of impact
- Likelihood of impact occurrence
- Sensitivity of impact
- Risk related to impact

b. Mitigation Assessment Criteria:

The Mitigation Hierarchy establishes a structure to guide development and application of measures to mitigate impacts on environmental values and associated components. The term 'mitigation' applies to four steps, or level in the mitigation hierarchy:

Step 1: Avoid
Step 2: Minimize
Step 3: Restore On-Site
Step 4: Offsite

c. General Principles:

1. Maintaining the integrity and natural functions and processes of ecosystems, and the resilience of ecosystems, is prerequisite to sustainable use of natural resources and essential to maintaining ecosystem goods and services over time.
2. The mitigation hierarchy is applied in order of priority as follows:

    a. Avoid
    b. Minimize
    c. Restore On-Site
    d. Offset (Off-Site or On-Site)
3. Generally, the "higher" the priority of the environmental value and associated component, the more protective the mitigation measures.
4. For an action or measure to be considered "mitigation", a party must accept responsibility for implementation of appropriate mitigation measures, and there must be certainty that the mitigation measures will be carried out.
5. Implementing mitigation measures can help resolve issues that may delay or prevent a proposed project or activity.

8.8 Purpose of Mitigation Measures

Purpose of mitigation measures should include:

What is the problem?

The proposed project under study is the socks manufacturing unit. The said project site is ex-textile mills structure which is located at agricultural cum industrial area. The major impacts may arise by the subject project are wastewater and air emissions. Other impacts are of minor importance. These impacts may arise during the operational phase of the proposed project because no full-fledged construction is involved only small-scale alteration & renovation will be undertaken within the premises of the site so it will not cause any major harmful impacts on the environment. While operational phase EMMP will be implemented whole heartedly to avoid adverse impacts on environment from the operation of the project in terms of air emissions, wastewater discharge and the management of the solid waste.

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

The impacts from the project will occur during the operational phase. These issues included; noise generation, air emissions, solid waste management, wastewater disposal, Health and Safety issues and changes 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.

Any impact that would arise due to the subject project activity will be addressed through proper channel and on site by implementing EMMP. Trainings will be conducted regarding HSE, firefighting, best work practices etc. while other precautionary measures are also adopted to make the project safe and environment friendly.

Where the 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. The problem should be address at the site and immediate response should be provided to address the problem which may arise.

Project proponent will be responsible for the implementation of EMP/EMMP and if required he will appoint an HSE Manager/Environmental Manager along with site manager to assess any impact that could be arisen during construction (alteration / renovation) and operational phases of the project. He is responsible to address the problem and to mitigate it.

How the problem should be addressed?

Proper mitigations measures will be provided according to the nature of the impacts/problems. The main elements of mitigation in the EIA process is as; Avoidance**,** Minimization and Compensation. Avoidance aims at avoiding the adverse impacts as far as possible by using preventive measures or by not carrying out the proposed action. Minimization aims at reducing adverse impacts by scaling down the magnitude of a project, or employing technology that reduces the factors generating the undesirable environmental impacts, while

compensation aims at remedying unavoidable residual adverse impacts. Compensation is the least desirable approach and should only be considered after the other elements have been completed.

8.9 Ways of Achieving Mitigation Measures

By adopting proper mitigation measures, any anticipated major or minor environmental impacts could be controlled or mitigated. The details of impacts and mitigation measures have been discussed earlier in this section. Management of M/s Mima Knit (Pvt.) Ltd. shall take appropriate measures to provide pollution free and safe environment during the development and operational stages of proposed project by implementing improved management practices and monitoring techniques suggested in EMP. The land will be restored after completion of the proposed project beautiful landscaping including grown trees, ornamental / flowering plants, grassy lawns / parks, etc. will be done as per plan.

M/s Mima Knit (Pvt.) Ltd. will develop restoration and reclamation plan to restore the natural landscape of the area. As mentioned above beautiful landscaping will be developed to rehabilitate the native plants of the area.

Table 8.2: Impact & Mitigation Matrix

Aspects	Potential Impacts / Risks	Likely Duration	Magnitude if not mitigated	Proposed Mitigation Measures	Responsibility
DESIGN STAGE					
a. Physical Environment					
Emergency Response	Risk of occurrence of emergency situations by natural & anthropogenic means such as earthquakes, floods, heavy rainfall, thunderstorm, fires due to electrical short-circuiting, over heating etc.	Permanent	Major negative	The following mitigation measures will be adopted to minimize or eliminate the emergency situations: ▪ The design of building will also include emergency exits which can be used during emergency situation emergency routes/pathways will also be well marked. ▪ Adequate internal and external water distribution system will be designed, which could also supply adequate quantity of water for firefighting during emergency. ▪ Firefighting arrangements including fire hydrant system connected with adequate water reservoir, fire extinguishers (DCP, AFFF, CO_2, etc.), Sand Buckets, fire alarm system (automatic & manual), smoke detectors, heat detectors, gas detectors, etc. will be provided at many locations where necessary.	Design consultant / proponent
b. Ecological Environment					
Impacts on Flora	Construction activities (only alteration & renovation) may not affect the flora.	-	-	▪ Construction (alteration & renovation activities) will be done in such a way to avoid any negative impact on flora of the site if any present as landscaping as well as outside of the premises. ▪ Beautiful landscaping including grown trees, ornamental / flowering plants & grassy lawns will be done on available open spaces in and	Design consultant / proponent

				outside/around the project site after completion of project.	
Impacts on Fauna	Fauna (wild birds) present at site if any may not be disturbed from alteration & renovation activities during construction.	-	-	▪ Alteration & renovation activities for the development of project will be done in such a way fauna within the site and outside the premises may not be disturbed or minimized the negative effects to an acceptable level. ▪ Best and latest technology will be selected which have low operational noise. ▪ Proper foundations will be constructed with rubbers for shock / vibration absorbers to avoid tremor / vibration which may increase the noise level. ▪ Trees will be planted around the building as buffer zone and which will act as sound barrier too. ▪ Beautiful landscaping including grown trees, ornamental / flowering plants & grassy lawns will be done on available open spaces in and outside/around the project site after completion of project which may attract fauna (wild birds) to nest here.	Design consultant / proponent
c. Socio-economic Environment					
Economic Growth	Causing of Economic gain	Permanent	Minor positive	▪ This will be minor positive impact and not required any mitigation measure.	-
CONSTRUCTION STAGE					
a. Physical Environment					
Impacts on Air Quality	Air quality may be disturbed during construction stage (alteration & renovation) of the proposed project.	Temporary	Minor negative	▪ Regular water sprinkling will be done on construction material like sand, soil/clay etc. and exposed areas of site for civil construction/excavations. ▪ Construction machinery will be maintained or overhauled in time to avoid any negative impact from their smoke especially standby power generator.	Contractor / Proponent

Disposal of Construction Solid Waste	Construction solid waste including debris, soil/clay, wood, other related waste from alteration / renovation will be produced. The construction waste that are unsuitable for use need to be stored, transported and disposed off appropriately at the designated sites.	Temporary	Moderate negative	▪ The construction waste will be carefully examined and disposed off in an environment friendly manner by transporting it in closed containers and filling at appropriate sites. ▪ It is also desirable to utilize the waste in such a way that it is consumed for the construction of any other structure within the Project Site or in the immediate vicinity.	Contractor / Proponent
b. Ecological Environment					
Impacts on Flora	Construction activities (only alteration & renovation) as per requirement for installation of machinery of the project may not impose negative impact on flora.	-	-	▪ Construction (alteration & renovation activities) will be done in such a way to avoid any negative impact on flora of the site if any present as landscaping as well as outside of the premises. ▪ Beautiful landscaping including grown trees, ornamental / flowering plants & grassy lawns will be done on available open spaces in and outside/around the project site after completion of project.	Contractor / Proponent
Impacts on Fauna	Construction activities (only alteration & renovation) may not impose any negative impacts on fauna (wild birds) of the locality.	-	-	▪ Construction (alteration & renovation activities) will be done in such a way to avoid any negative impact on fauna (birds) of the site if any present as well as outside of the premises. ▪ Beautiful landscaping including grown trees, ornamental / flowering plants & grassy lawns will be done on available open spaces in and outside/around the project site after completion of project. ▪ Landscaping may attract the fauna (wild birds) to nest here.	Contractor / Proponent
c. Socio-economic Environment					
Employment	Employment generation	-	-	-	-

Generation	during construction stage will be minor positive change.				
Health and Safety of Workers	Construction activities impose certain negative impacts on health & safety of construction workers and public.	Temporary	Moderate negative	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; ▪ Proponents 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 an accident. ▪ First aid kits and other necessary equipment will be kept available at site along with the list of emergency phone numbers to be contacted in case of any accident.	Contractor / Proponent
OPERATIONAL STAGE					
a. Physical Environment					
Air Quality	Risk of deterioration of ambient air from emissions to be generated from stacks of standby power generator.	Permanent	Moderate negative	In order to minimize air pollution, following mitigation measures are recommended: ▪ An air quality monitoring and improvement plan will be developed to keep the air pollution level within the limits of Punjab Environmental Quality Standards (PEQS) ▪ Standby power generators will be placed at concrete foundation equipped with shock absorber rubbers, sound proof canopy, silencer, smoke arrestor and stack with proper height. ▪ Maintenance and overhauling schedule will	Factory Management / Proponent

				also be developed. ▪ Standby power generator and boiler will be maintained or over hauled well within time according to schedule and periodically checked or inspected to avoid any excessive smoke. ▪ No leak system by proper maintenance of valves, seals & flanges ▪ Well capped containers ▪ Good housekeeping,	
Noise	Noise pollution may be generated from operations of plant machinery, standby power generators and this noise pollution may affect the health of workers & ecological environment i.e. fauna.	Permanent	Moderate negative	▪ Proper foundation of the plant machinery, standby power generator & boiler will be designed to cope with the problem of tremor / vibration which will consequently abate the noise problem. ▪ Noise level monitoring plan and improvement plan will be developed and implemented with letter & spirit. ▪ The standby power generators and boilers will be over hauled and well tuned according to the schedule to avoid excessive noise. ▪ 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.	Factory Management / Proponent
Water Consumption	Very little quantity of water will be utilized by the proposed project during its operational phase which shall not exert any negative change on water table.	-	-	▪ At open places the grassy lawns will be developed to recharge the water table which is help to control the surface runoff during rainy season. ▪ More landscaping will also be done at available open place after completions of project ▪ The overall nature of the area is agricultural it	Factory Management / Proponent

				is also help to recharge the water table. ▪ Water to be used in production hall will be re-used/re-cycled. ▪ The workers will be given training to avoid wastage of water. ▪ Regular inspection of water tapes, valves and water lines as per schedule or periodically will be undertaken.	
Wastewater Generation	Wastewater to be generated from the proposed project while its operational phase would require proper treatment, if not done so, it will affect the environment negatively.	Permanent	Major negative	▪ Chemical + Biological type of WWTP / ETP with capacity of 100,000 gallons / day will be installed for the treatment of the wastewaters to fulfill the compliance of PEQS. ▪ After treatment, the treated wastewater will be disposed off into wastewater channel.	Factory Management / Proponent
Solid Waste Generation	Non-hazardous / recyclable nature solid wastes and organic wastes will be produced .	Permanent	Moderate negative	▪ The recyclable waste including yarn corn, lose thread, empty carton, packaging waste, polythene bags, wood, etc. will be handed over to EPA Approved waste contractor. ▪ Organic waste to be produced from kitchen / will be handed over to mess contractor who then will dispose off properly as per local Govt. policy like MSW wastes. ▪ A track record of solid waste will be maintained.	Factory Management / Proponent
Emergency Response	The operation of the proposed project will involve workers and visitors who may become ill or have work related accidents. In addition, disasters including natural & anthropogenic such as earthquakes, floods, heavy rainfall / thunder storm & fires due to electrical short	Permanent	Major negative	▪ A comprehensive Emergency Response Plan (ERP) for emergency / fire conditions and disastrous situations will be developed and implemented whole heartedly during the operational phase of the project. ▪ Sufficient / appropriate firefighting arrangements such as Central fire hydrant system, fire extinguishers, fire alarm systems, heat detectors, smoke detectors, sand buckets, etc. have been placed / installed at	Factory Management / Proponent

	circuiting, overheating, etc. may occur which have to be considered for minimizing their impacts.			many necessary locations in the unit. ▪ Firefighting arrangements have been undertaken according to the requirements of Civil Defense Department and international standards. ▪ Emergency assembly points are marked and factory workers are trained to cope with any emergency situation. ▪ Regular training workshops & emergency / fire drills of workers are scheduled to be held regularly. ▪ All firefighting, emergency and safety equipment shall be frequently checked and properly maintained. ▪ Safety signs, emergency exits, emergency routs will be displayed & mentioned at many / appropriate places. ▪ Emergency exits and routs will be kept clear from obstacles to avoid any hurdle / panic while emergency condition.	
b. Ecological Environment					
Impacts on Flora	Operation of the proposed project will not exert significant negative impact overall on flora of the site and also flora of local /surrounding area.	Permanent	Minor negative	▪ Beautiful landscaping including grown trees, ornamental / flowering plants & grassy lawns will be developed at available open places in the proposed unit. ▪ To avoid any negative impact on flora of the site and flora of project area / outside area, air emissions and wastewater quality will be monitored and kept controlled within PEQS limits.	Factory Management / Proponent
Impacts on Fauna	The usual fauna such as wild birds may be affected from noisy operation of different components of the project.	Permanent	Minor negative	▪ Best and latest technology will be selected which have low operational noise and emissions. ▪ Proper foundations will be constructed with shock / vibration absorbers to avoid tremor /	Factory Management / Proponent

				vibration which may increase the noise level. ▪ Trees will be planted around the building as buffer zone and play as sound barrier. ▪ Beautiful landscaping including grown trees, ornamental / flowering plants & grassy lawns will be done on available open spaces in and outside/around the project site after completion of project which may attract the fauna (wild birds) to nest here. ▪ Noise level monitoring plan will also be developed to control excessive noise to avoid any negative impact on fauna which may disturbed them.	
c. Socio-economic Environment					
Employment Generation	Employment generation during operation phase of the proposed project will be positive change	Permanent	Major positive	-	-
Generation of Revenue	Generation of revenue and taxes for government will also be positive impact	Permanent	Major positive	-	-
Health and Safety of Workers	The workers especially working in the production hall / production area may be at health risk, because there are always chances of accident, incident, near miss, dangerous occurrence, work related ill-health while working at workplace. The workers may face ill-health, disease and temporary & permanent disability in case of severe injury and may face fatality in case of severe accident. If	permanent	Major negative	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. ▪ The workers will be given information, instruction, training and supervision specific to their job and / or nature / requirement of their work, in safety precautions and procedures. ▪ Protective clothing and equipment comprising helmet of cloth cap, safety spectacles or goggles, respirators or masks, rubber or	Factory Management / Proponent

	they do not properly trained and provided with Personal Protective Equipments (PPEs) this will be major negative impact if not mitigated properly.			plastic gloves and safety shoes 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. ▪ To avoid any potential environmental hazards the workers would be trained properly so that they know the potential hazard of chemical. ▪ Proper cross ventilation shall be undertaken 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 suitable / prominent places. ▪ Adequate supply of water shall be made available to the workers for personal washing as well as for washing their protective equipment. ▪ Protective clothing and equipment 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. ▪ First aid medical facility 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.	

Section 9: SCREENING OF POTENTIAL ENVIRONMENTAL IMPACTS AND MITIGATION MEASURES

9.1 General

This section identifies the potential impacts due to implementation of the proposed project activities on the physical, ecological and social environment of the project surrounding/area. The potential environmental impacts related to the proposed ingots and billets manufacturing unit have been studied related to location, design, construction and operational stages of the Project. The section also identifies mitigation measures that will help to mitigate the project's adverse environmental effects or to reduce them to an acceptable level within the prevailing legislative and regulatory framework.

9.2 Screening of Impacts & Mitigation Measures

The subject project impacts and mitigation measures have been studied keeping in view of following parameters while its different phases:

- Project location related impacts & mitigation measures
- Design related impacts & mitigation measures
- Construction stage impacts & mitigation measures
- Operational stage impacts & mitigation measures

9.3 Project Location Related Impact & Mitigation Measures

The subject proposed project is being established at premises of ex-textile mills where building / structure is present and same will be utilized for the proposed socks manufacturing unit after requisite alteration & renovation in the current structure. Moreover, industrial activities were being used to carry out at the site. Hence the subject proposed project will not contradict to the status / nature of the immediate surrounding / project area.

Additionally, the entire basic infrastructure is available at the site and in the project area which are necessary to run the business. So, due to the proposed project construction (alteration & renovation) and operations no any impacts are seen related to project location scenario.

9.4 Design Related Impacts & Mitigation Measures

The negative impacts related to design of the proposed project will not be significant as the proposed project area has many industrial units. The buildings/structure of ex-textile mills had been designed according to the industrial standards having emergency exits. The plant / machinery for socks manufacturing will have been according to PEQS Punjab, so compliance of PEQS will automatically be done. Moreover, ETP will also be installed for the treatment of wastewater for compliance of ETP.

In view of these considerations no environmental problems are foreseen in the context of design of proposed project. However, the possible impacts of propose

project regarding physical environment, ecological environment and socio-economic environment have been considered and their mitigation measures proposed as under:

9.4.1 Impacts

Anticipated impacts relating to design of the proposed project regarding physical environment, ecological environment & socio-economic environment are as under:

a. Physical Environment

Impacts on physical environment during design stage are as under:

- **Emergency response**

There are always chances of occurrence of emergency situations by natural & anthropogenic means such as earthquakes, floods, heavy rainfall, thunderstorm, fires due to electrical short-circuiting; overheating etc. it will be major negative impact.

b. Ecological Environment

- **Impacts on Flora**

Alteration & renovation activities during construction/installation phase including may not affect the flora.

- **Impacts on Fauna**

Only small scale alteration & renovation activities will be undertaken during construction/installation phase which may not affect the fauna. Further during operational phase noise from industrial activity may affect the fauna some negligible levels.

c. Socio-economic Environment

- **Economic growth**

After the development of proposed project economic growth will be gained by different dimensions e.g. employment generation, will ultimately help to uplift the local & national economy eventually.

9.4.2 Mitigation Measures

Suitable mitigation measures for above mentioned anticipated impacts are as under:

a. Physical Environment

➢ **Emergency response**

The following mitigation measures will be adopted to minimize or eliminate the emergency situations:

- The design of building will also include emergency exits which can be used during emergency situation emergency routes/pathways will also be well marked.
- Adequate internal and external water distribution system will be designed, which could also supply adequate quantity of water for firefighting during emergency.
- Firefighting arrangements including fire hydrant system connected with adequate water reservoir, fire extinguishers (DCP, AFFF, CO_2, etc.), Sand Buckets, fire alarm system (automatic & manual), smoke detectors, heat detectors, gas detectors, etc. will be provided at many locations where necessary.

b. Ecological Environment

➢ **Impacts on Flora**

- Beautiful landscaping including grown trees, ornamental / flowering plants & grassy lawns will be done on available open spaces in and outside/around the project site after completion of project.

➢ **Impacts on Fauna**

- Alteration & renovation activities for the development of project will be done in such a way fauna within the site and outside the premises may not be disturbed or minimized the negative effects to an acceptable level.
- Best and latest technology will be selected which have low operational noise.
- Proper foundations will be constructed with rubbers for shock / vibration absorbers to avoid tremor / vibration which may increase the noise level.
- Trees will be planted around the building as buffer zone and which will act as sound barrier too.
- Beautiful landscaping including grown trees, ornamental / flowering plants & grassy lawns will be done on available open spaces in and outside/around the project site after completion of project which may attract fauna (wild birds) to nest here.

c. Socio-economic Environment

➢ **Economic Growth**

- Employment generation & economic gain will be positive impact and not required any mitigation measure.

9.5 Construction Phase Impacts & Mitigation Measures

The potential environmental impacts of the proposed project along with the mitigation measures during the construction stage (alteration, renovation &

installation) of the project have been described as follows:

9.5.1 Impacts

Anticipated impacts during construction stage (alteration, renovation & installation) of the proposed project have been discussed in context of physical environment, ecological environment & socio-economic environment as below:

a. Physical Environment

Anticipated impacts during construction phase on physical environment are as follows:

- **Impacts on Air Quality**

During construction phase very small scale alteration & renovation will be undertaken as per requirement in the current structure and installation of machinery will be done. So no as such significant change in the ambient air of the site will be foreseen however precautionary measures will be adopted to avoid any degradation of air from alteration in civil structure and dust generation from civil work / construction material.

- **Disposal of Construction Solid Waste**

Construction solid waste including debris, soil/clay, wood, other related waste from alteration / renovation will be produced. Proper landscaping will, therefore, be given due consideration along with re-establishment of the local/indigenous vegetation. The construction waste that are unsuitable for use need to be stored, transported and disposed off appropriately at the designated sites.

b. Ecological Environment

- **Impacts on Flora**

Construction activities (only alteration & renovation) as per requirement for installation of machinery of the project may not impose negative impact on flora.

- **Impacts on Fauna**

The usual fauna found at the project locality is sparrows, crows, common mainas etc. Construction activities (only alteration & renovation) may not impose any negative impacts on fauna (wild birds) of the locality.

c. Socio-economic Environment

- **Employment Generation**

During construction stage of the proposed project, employment generation for

workers / laborers will be positive change.

- **Health and Safety of Workers**

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

9.5.2 Mitigation Measures

Following mitigation measures are suggested to eliminate or minimize above mentioned potential negative impacts to an acceptable level during construction phase of the proposed project:

a. Physical Environment

- **Impacts on Air Quality**

- Regular water sprinkling will be done on construction material like sand, soil/clay etc. and exposed areas of site for civil construction/excavations.
- Construction machinery will be maintained or overhauled in time to avoid any negative impact from their smoke especially standby power generator.

- **Disposal of Construction Solid Waste**

- The construction waste will be carefully examined and disposed off in an environment friendly manner by transporting it in closed containers and filling at appropriate sites.
- It is also desirable to utilize the waste in such a way that it is consumed for the construction of any other structure within the Project Site or in the immediate vicinity.

b. Ecological Environment

- **Impacts on Flora**

- Construction (alteration & renovation activities) will be done in such a way to avoid any negative impact on flora of the site if any present as landscaping as well as outside of the premises.
- Beautiful landscaping including grown trees, ornamental / flowering plants & grassy lawns will be done on available open spaces in and outside/around the project site after completion of project.

- **Impacts on Fauna**

- Construction (alteration & renovation activities) will be done in such a way to avoid any negative impact on fauna (birds) of the site if any present as well as outside of the premises.
- Beautiful landscaping including grown trees, ornamental / flowering plants

& grassy lawns will be done on available open spaces in and outside/around the project site after completion of project.
- Landscaping may attract the fauna (wild birds) to nest here.

c. Socio-economic Environment

➢ **Employment Generation**

- Employment generation will be positive change.

➢ **Health and Safety of Workers**

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;
- Proponents 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 an accident.
- First aid kits and other necessary equipment will be kept available at site along with the list of emergency phone numbers to be contacted in case of any accident.

9.6 Operational Phase Impacts & Mitigation Measures

The anticipated environmental impacts and their suitable mitigation measures related to the proposed project during its operational phase have been studied and listed as below: -

9.6.1 Impacts

Anticipated impacts from operational phase of the proposed project regarding physical environment, ecological environment & socio-economic environment have been discussed as follows:

a. Physical Environment

➢ **Air Quality**

During regular operations of the proposed project, no as such process air emissions containing hazardous nature gases will be produced. However, negligible emissions from operations of standby power generator will be generated, which may require proper safety & precautionary measure in place to avoid any degradation of ambient air of the area. However, boiler will also be installed which will be fired on Natural Gas and have no as such air emissions.

- **Noise**

During the operational stage, the noise will be produced from operation of plant machinery. Noise levels will be increased at some negligible level near the production hall but it will be mitigated if not, may have moderate negative impact.

- **Water Consumption**

During the operational phase of the proposed project, the water will be used in the process (dyeing & washing), washrooms/toilets, kitchen/mess, etc. in quantity of approximately 100,000 gallons/day. The source of water will be underground. Utilization of small quantity of water will not exert any negative impact on underground water sources especially on underground water table. Because the overall nature of the area is agricultural in a broad-spectrum; cultivated lands and irrigational channels are present in the project area. Moreover, grassy lawns will be developed within the mill's / unit's premises. Hence these are the sources to recharge the underground water table.

- **Wastewater Generation**

During operational phase of the proposed socks manufacturing unit, approximately 60,000 to 70,000 gallons/day of wastewater will be produced from different sources like production (dyeing & washing), toilets / washrooms & kitchen / mess, etc.

- **Solid Waste Generation**

During the operational phase of the subject proposed project, no any type of hazardous nature solid waste will be produced. Recyclable nature (non-hazardous waste) including yarn corn, lose thread, empty carton, packaging waste, polythene bags, wood, etc. will be produced. Moreover, organic waste will also be produced from kitchen/mess.

- **Emergency Response**

The operation of the proposed project will involve workers and visitors who may become ill or have work related accidents. In addition, disasters including natural & anthropogenic such as earthquakes, floods, heavy rainfall / thunder storm & fires due to electrical short circuiting, overheating, etc. may occur which have to be considered for minimizing their impacts.

b. Ecological Environment

- **Impacts on Flora**

Operation of the proposed project will not exert significant negative impact overall on flora of the site and also flora of local /surrounding area. However, emissions from operation of standby power generators will be generated at very small scale. Furthermore, wastewater will be produced from the

proposed project and needs proper treatment, if not treated, may have negative impacts on flora as well as overall environment.

- **Impacts on Fauna**

Noisy operation of machines, standby power generators will have some negligible impact on fauna (wild birds). It will be minor negative impact if not mitigated properly.

c. Socio-economic Environment

- **Employment Generation**

When project will be in full operation, it will generate employment for the people of about 300 workers. This will be a major positive impact.

- **Generation of Revenue**

M/s Mima Knit (Pvt.) Ltd. will generate revenue for Government. This will be a major positive impact.

- **Health and Safety of Workers**

The workers especially working in the production hall / production area may be at health risk, because there are always chances of accident, incident, near miss, dangerous occurrence, work related ill-health while working at workplace. The workers may face ill-health, disease and temporary & permanent disability in case of severe injury and may face fatality in case of severe accident. If they do not properly trained and provided with Personal Protective Equipments (PPEs) this will be major negative impact if not mitigated properly.

9.6.2 Mitigation Measures

Mitigation measures for operation stage of the proposed project as mentioned above are listed below:

a. Physical Environment

- **Air Quality**

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

- An air quality monitoring and improvement plan will be developed to keep the air pollution level within the limits of Punjab Environmental Quality Standards (PEQS)
- Standby power generators will be placed at concrete foundation equipped with shock absorber rubbers, sound proof canopy, silencer, smoke arrestor and stack with proper height.

- Maintenance and overhauling schedule will also be developed.
- Standby power generator and boiler will be maintained or over hauled well within time according to schedule and periodically checked or inspected to avoid any excessive smoke.
- No leak system by proper maintenance of valves, seals & flanges
- Well capped containers
- Good housekeeping,

➢ **Noise**

- Proper foundation of the plant machinery, standby power generator & boiler will be designed to cope with the problem of tremor / vibration which will consequently abate the noise problem.
- Noise level monitoring plan and improvement plan will be developed and implemented with letter & spirit.
- The standby power generators and boilers will be over hauled and well tuned according to the schedule to avoid excessive noise.
- 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.

➢ **Water Consumption**

- At open places the grassy lawns will be developed to recharge the water table which is help to control the surface runoff during rainy season.
- More landscaping will also be done at available open place after completions of project
- The overall nature of the area is agricultural it is also help to recharge the water table.
- Water to be used in production hall will be re-used/re-cycled.
- The workers will be given training to avoid wastage of water.
- Regular inspection of water tapes, valves and water lines as per schedule or periodically will be undertaken.

➢ **Wastewater Generation**

- Chemical + Biological type of WWTP / ETP with capacity of 100,000 gallons / day will be installed for the treatment of the wastewaters to fulfill the compliance of PEQS.
- After treatment, the treated wastewater will be disposed off into wastewater channel.

➢ **Solid Waste Generation**

- The recyclable waste including yarn corn, lose thread, empty carton, packaging waste, polythene bags, wood, etc. will be handed over to EPA Approved waste contractor.
- Organic waste to be produced from kitchen / will be handed over to mess contractor who then will dispose off properly as per local Govt. policy like

MSW wastes.
- A track record of solid waste will be maintained.

➢ **Emergency Response**

- A comprehensive Emergency Response Plan (ERP) for emergency / fire conditions and disastrous situations will be developed and implemented whole heartedly during the operational phase of the project.
- Sufficient / appropriate firefighting arrangements such as Central fire hydrant system, fire extinguishers, fire alarm systems, heat detectors, smoke detectors, sand buckets, etc. have been placed / installed at many necessary locations in the unit.
- Firefighting arrangements have been undertaken according to the requirements of Civil Defense Department and international standards.
- Emergency assembly points are marked and factory workers are trained to cope with any emergency situation.
- Regular training workshops & emergency / fire drills of workers are scheduled to be held regularly.
- All firefighting, emergency and safety equipment shall be frequently checked and properly maintained.
- Safety signs, emergency exits, emergency routs will be displayed & mentioned at many / appropriate places.
  Emergency exits and routs will be kept clear from obstacles to avoid any hurdle / panic while emergency condition.

b. Ecological Environment

➢ **Impacts on Flora**

- Beautiful landscaping including grown trees, ornamental / flowering plants & grassy lawns will be developed at available open places in the proposed unit.
- To avoid any negative impact on flora of the site and flora of project area / outside area, air emissions and wastewater quality will be monitored and kept controlled within PEQS limits.

➢ **Impacts on Fauna**

- Best and latest technology will be selected which have low operational noise and emissions.
- Proper foundations will be constructed with shock / vibration absorbers to avoid tremor / vibration which may increase the noise level.
- Trees will be planted around the building as buffer zone and play as sound barrier.
- Beautiful landscaping including grown trees, ornamental / flowering plants & grassy lawns will be done on available open spaces in and outside/around the project site after completion of project which may attract the fauna (wild birds) to nest here.
- Noise level monitoring plan will also be developed to control excessive noise to avoid any negative impact on fauna which may disturbed them.

c. Socio-economic Environment

- **Employment Generation**

- Employment generation will be positive impact.

- **Generation of Revenue**

- Generation of revenue or taxes which will be paid to Government, will be positive impact.

- **Health and Safety of Workers**

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.
- The workers will be given information, instruction, training and supervision specific to their job and / or nature / requirement of their work, in safety precautions and procedures.
- Protective clothing and equipment comprising helmet of cloth cap, safety spectacles or goggles, respirators or masks, rubber or plastic gloves and safety shoes 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.
- To avoid any potential environmental hazards the workers would be trained properly so that they know the potential hazard of chemical.
- Proper cross ventilation shall be undertaken 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 suitable / prominent places.
- Adequate supply of water shall be made available to the workers for personal washing as well as for washing their protective equipments.
- Protective clothing and equipment 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.
- First aid medical facility 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.

9.7 Potential Environmental Enhancement Measures

Following potential environmental enhancement measures including safety & health enhancement measures will be implemented during construction & operational stage of the proposed project:

- Environmental Management Plan and Monitoring Plan (EMMP) suggested in EIA Report should be strictly followed and operational throughout the project life. All monitored data should be reported to the EPA Punjab, Lahore for scrutiny at their end.
- Effluent Treatment Plant / Waste Water Treatment Plant must be installed for the treatment of wastewater producing from the proposed project for compliance of PEQS ultimately for the safeguard of environment.
- Solid waste management plan including safe storage, segregation (on site or off site by contractor), transportation and safe disposal should be developed and track record will be maintained.
- Environmental Monitoring plan including air quality monitoring, wastewater analysis and noise level should be developed and implemented to keep all the parameters within the limits of Punjab Environmental Quality Standards (PEQS) and specially to evaluate the performance of mitigations and control devices such as ETP, Firefighting arrangements, PPEs, etc.
- Emergency Response Plan (ERP) must be developed and implemented with letter & spirit.
- ERP should be reviewed and update as necessary, periodically or annually.
- Sufficient / appropriate firefighting arrangements according to the requirements of Civil Defense Department and international standards should be done.
- All firefighting arrangements including fire extinguishers, fire hydrant system connected with water reservoir, sand buckets, smoke detectors, heat detectors, fire alarm system etc. must be arranged.
- Above mentioned firefighting arrangements should be inspected periodically as per schedule and maintained.
- Safety signs, emergency exits, emergency routs should be displayed & mentioned at many / appropriate places.
- Emergency exits and routs must be kept clear from obstacles to avoid any hurdle / panic while emergency condition.
- The workers should be provided with complete PPEs according to the nature or requirement of their jobs including Protective clothing / apparel and others comprising face masks, rubber or plastic gloves and safety shoes and no worker shall be permitted to perform their job unless and until he is wearing such protective clothing and PPEs.
- All workers should be thoroughly trained in environment, health & safety precautions.
- Adequate supply of water should be made available to the workers for personal washing as well as for washing their protective equipments.
- Protective clothing and equipment of the workers should be washed and cleaned as often as required to ensure their efficiency.
- No worker should be permitted to eat or drink at work place & till he has removed his protective clothing and equipment, washed his hands and face and left the place of work.
- First aid boxes equipped with required antidotes should be available in the premises, supervised by trained staff.
- Medical checkup of all workers should be carried out at the time of employment and at least once a year thereafter.

Section 10: ENVIRONMENTAL MANAGEMENT AND MONITORING PROGRAM

10.1 Environmental Management

To implement the recommendations and suggestions for environmental protection included in the preceding Section 9 “Screening of Potential Environmental Impacts & Mitigations Measures” of this study, a comprehensive Environmental Management Plan is needed.

The objective of the Environmental Monitoring & Management Plan (EMMP) is to address all the major environmental issues and provide framework for the implementation of the proposed mitigation measures during the design, construction and operational stages of the proposed project. The proper implementation of the EMMP will ensure that all the adverse environmental impacts identified in the EIA Study are adequately mitigated, either totally prevented or minimized to an acceptable level and required actions to achieve those objectives are successfully adopted by the concerned institutions or regulatory agencies. The implementation of EMMP will be carefully coordinated with design and construction program of the proposed project to ensure that relevant mitigation measures are implemented at the most appropriate stage and those resources are properly allocated to achieve the desired results.

For effective environmental management, client will assign the necessary responsibilities to an Environmental Management Team headed by a well-trained person in the field of environment, which will be responsible for the environmental monitoring of the project.

The contractor will be responsible for the execution of the project under supervision of the client. The contractor will be bound to follow the provisions of the contract documents especially about the environmental protection measures and apply good construction techniques and methodology without damaging the existing environment. Obligation(s) of the contractor, to safeguard and mitigate adverse impacts and rehabilitate the environment will be addressed through environmental provisions in the contract document(s) as already highlighted in this EIA Study through adequate implementation at site.

10.2 Description of Proposed Mitigation Actions

Description of impacts & proposes mitigation measures have been discussed in the following table:

Table 10.1: Description of Impacts & Proposed Mitigation Measures

IMPACTS	MITIGATION MEASURES
Impacts on Air Quality During regular operations of the proposed project, no as such process air emissions containing hazardous nature gases will be produced.	In order to minimize air pollution, following mitigation measures are recommended: ▪ An air quality monitoring and improvement plan will be developed to keep the air pollution level within the limits of Punjab

However, negligible emissions from operations of standby power generator will be generated, which may require proper safety & precautionary measure in place to avoid any degradation of ambient air of the area. However, boiler will also be installed which will be fired on Natural Gas and have no as such air emissions.	Environmental Quality Standards (PEQS) ▪ Standby power generators will be placed at concrete foundation equipped with shock absorber rubbers, sound proof canopy, silencer, smoke arrestor and stack with proper height. ▪ Maintenance and overhauling schedule will also be developed. ▪ Standby power generator and boiler will be maintained or over hauled well within time according to schedule and periodically checked or inspected to avoid any excessive smoke. ▪ No leak system by proper maintenance of valves, seals & flanges ▪ Well capped containers ▪ Good housekeeping,
Noise During the operational stage, the noise will be produced from operation of plant machinery. Noise levels will be increased at some negligible level near the production hall but it will be mitigated if not, may have moderate negative impact.	▪ Proper foundation of the plant machinery, standby power generator & boiler will be designed to cope with the problem of tremor / vibration which will consequently abate the noise problem. ▪ Noise level monitoring plan and improvement plan will be developed and implemented with letter & spirit. ▪ The standby power generators and boilers will be over hauled and well-tuned according to the schedule to avoid excessive noise. ▪ 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.
Water Consumption In the proposed project water will mainly be used in dyeing, washing, toilets/washrooms, kitchen, etc.	▪ At open places the grassy lawns will be developed to recharge the water table which is help to control the surface runoff during rainy season. ▪ More landscaping will also be done at available open place after completions of project ▪ The overall nature of the area is agricultural it is also help to recharge the water table. ▪ Water to be used in production hall will be re-used/re-cycled. ▪ The workers will be given training to avoid wastage of water. ▪ Regular inspection of water tapes, valves and water lines as per schedule or periodically will be undertaken.
Wastewater Generation During operational phase of the	▪ Chemical + Biological type of WWTP / ETP with capacity of 100,000 gallons / day will

proposed socks manufacturing unit, approximately 60,000 to 70,000 gallons/day of wastewater will be produced from different sources like production (dyeing & washing), toilets / washrooms & kitchen / mess, etc.	be installed for the treatment of the wastewaters to fulfill the compliance of PEQS. ▪ After treatment, the treated wastewater will be disposed off into wastewater channel.
Solid Waste Generation During the operational phase of the subject proposed project, no any type of hazardous nature solid waste will be produced. Recyclable nature (non-hazardous waste) including yarn corn, lose thread, empty carton, packaging waste, polythene bags, wood, etc. will be produced. Moreover, organic waste will also be produced from kitchen/mess.	▪ The recyclable waste including yarn corn, lose thread, empty carton, packaging waste, polythene bags, wood, etc. will be handed over to EPA Approved waste contractor. ▪ Organic waste to be produced from kitchen / will be handed over to mess contractor who then will dispose off properly as per local Govt. policy like MSW wastes. ▪ A track record of solid waste will be maintained.
Emergency Response The operation of the proposed project will involve workers and visitors who may become ill or have work related accidents. In addition, disasters including natural & anthropogenic such as earthquakes, floods, heavy rainfall / thunder storm & fires due to electrical short circuiting, overheating, etc. may occur which have to be considered for minimizing their impacts.	▪ A comprehensive Emergency Response Plan (ERP) for emergency / fire conditions and disastrous situations will be developed and implemented whole heartedly during the operational phase of the project. ▪ Sufficient / appropriate firefighting arrangements such as Central fire hydrant system, fire extinguishers, fire alarm systems, heat detectors, smoke detectors, sand buckets, etc. have been placed / installed at many necessary locations in the unit. ▪ Firefighting arrangements have been undertaken according to the requirements of Civil Defense Department and international standards. ▪ Emergency assembly points are marked and factory workers are trained to cope with any emergency situation. ▪ Regular training workshops & emergency / fire drills of workers are scheduled to be held regularly. ▪ All firefighting, emergency and safety equipment shall be frequently checked and properly maintained. ▪ Safety signs, emergency exits, emergency routs will be displayed & mentioned at many / appropriate places. ▪ Emergency exits and routs will be kept clear from obstacles to avoid any hurdle / panic while emergency condition.
Impacts on Flora Operation of the proposed project will not exert significant negative impact overall on flora of the site and also flora of local /surrounding area.	▪ Beautiful landscaping including grown trees, ornamental / flowering plants & grassy lawns will be developed at available open places in the proposed unit. ▪ To avoid any negative impact on flora of the site and flora of project area / outside

	area, air emissions and wastewater quality will be monitored and kept controlled within PEQS limits.
Impacts on Fauna Noisy operation of machines, standby power generators will have some negligible impact on fauna (wild birds). It will be minor negative impact if not mitigated properly.	▪ Best and latest technology will be selected which have low operational noise and emissions. ▪ Proper foundations will be constructed with shock / vibration absorbers to avoid tremor / vibration which may increase the noise level. ▪ Trees will be planted around the building as buffer zone and play as sound barrier. ▪ Beautiful landscaping including grown trees, ornamental / flowering plants & grassy lawns will be done on available open spaces in and outside/around the project site after completion of project which may attract the fauna (wild birds) to nest here. ▪ Noise level monitoring plan will also be developed to control excessive noise to avoid any negative impact on fauna which may disturbed them.
Health & Safety of Workers The workers especially working in the production hall / production area may be at health risk, because there are always chances of accident, incident, near miss, dangerous occurrence, work related ill-health while working at workplace. The workers may face ill-health, disease and temporary & permanent disability in case of severe injury and may face fatality in case of severe accident. If they do not properly train and provided with Personal Protective Equipments (PPEs) this will be major negative impact if not mitigated properly.	▪ No worker aged below 18 years or over 60 years shall be employed for any job involving physical handling of hazardous substances. ▪ The workers will be given information, instruction, training and supervision specific to their job and / or nature / requirement of their work, in safety precautions and procedures. ▪ Protective clothing and equipment comprising helmet of cloth cap, safety spectacles or goggles, respirators or masks, rubber or plastic gloves and safety shoes 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. ▪ To avoid any potential environmental hazards the workers would be trained properly so that they know the potential hazard of chemical. ▪ Proper cross ventilation shall be undertaken 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 suitable / prominent places.

	▪ Adequate supply of water shall be made available to the workers for personal washing as well as for washing their protective equipment. ▪ Protective clothing and equipment 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. ▪ First aid medical facility 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.

10.3 Schedule for Implementation and Environmental Budget

Currently the proponent is seeking Environmental Approval from EPA, Punjab and after obtaining of said approval construction (alteration & renovation) will be started. The environmental budget will be implemented while in construction phase once in project life and during operational phase environmental budget will be allocated annually and it will be implemented throughout the project life.

The cost required to effectively implement the mitigation measures is important for the sustainability of the Project. The proponent of the subject industrial unit has allocated the Environmental budget as per requirements for construction phase (alteration & renovation) and operational phase of the project for recover any damages done by the project activities to environment which will include Environment, Health & Safety, for restoration, rehabilitation & landscaping of the area, for installing any pollution abating technology or equipment such as ETP, for any maintenance and repair of safety devices, for the implementation of Environmental Management Plan and other environment related aspects.

Environmental Budget and its breakup with Schedule for implementation is as under:

Table 10.2: Environmental Budget with Implementation Schedule

Environmental Component	Amount PKR	Schedule of Implementation
Construction Phase		
Landscaping	1,000,000	Once in project life
Environmental Monitoring	100,000	Quarterly
Operational Phase		
Environmental Monitoring	100,000	Quarterly
O & M Cost of ETP / WWTP	1,000,000	Monthly
Firefighting Arrangements	1,200,000	Yearly
PPEs	1,000,000	Yearly

Tree Plantation & O & M of Landscaping	400,000	Yearly

10.4 Environmental Management Team (EMT)

Environmental Management Team (EMT) will be made responsible for overseeing the environmental performance in the industry and develop, implement and monitor environmental strategies that promote sustainable production. The EMT will comprise Environmental Manager, Assistant Managers, inspectors; their responsibilities are as follows in the following table;

Table 10.3: Environmental Management Team their Roles & Responsibilities

Position of Team Member	Roles and Responsibilities
Environmental Manager	▪ Implementing environmental policies and practices ▪ Devising strategies to meet targets and to encourage best practice ▪ Devising the best tools and systems to monitor performance and to implement strategies ▪ Ensuring compliance with environmental legislation ▪ Assessing, analyzing and collating environmental performance data and reporting information to internal staff, clients and regulatory bodies ▪ Confirming that materials, ingredients and so on are ethically or environmentally sourced ▪ Managing environmental strategy budgets ▪ Liaising with internal staff including senior managers and directors ▪ Acting as a champion or cheerleader for environmental issues within your organization ▪ Providing environmental training to staff at all levels ▪ Writing plans and reports ▪ Keeping up to date with relevant changes in environmental legislation and initiatives including international legislation where applicable ▪ Producing educational or information resources for internal staff, clients or the general public ▪ Liaising with regulatory bodies such as the Environment Agency
Assistant Manager Compliance	▪ Develop and oversee control systems to prevent or deal with violations of legal guidelines and internal policies ▪ Evaluate the efficiency of controls and improve them continuously ▪ Revise procedures, reports etc. periodically to identify hidden risks or non-conformity issues ▪ Draft, modify and implement company policies ▪ Collaborate with corporate counsels and HR departments to monitor enforcement of standards and regulations ▪ Assess the business's future ventures to identify possible compliance risks ▪ Review the work of colleagues when necessary to identify compliance issues and provide advice or training ▪ Keep abreast of regulatory developments within or outside of

	the company as well as evolving best practices in compliance control ▪ Prepare reports for senior management and external regulatory bodies as appropriate
Assistant Manager EHS	▪ Research health and safety regulations, such as OSHA laws, and create company safety protocols. ▪ Supervise safety and security staff. ▪ Look into accident and injury claims company-wide, ensuring results consistent with company goals. ▪ Educate all personnel on health and safety policies and company safety goals

10.4.1 Institutional Capacity for effective Environment Management

To maintain or enhance the institutional capacity for effective Environment Management through implementation of Environmental Management & Monitoring Plan (EMMP), implementation of mitigation measures suggested in EIA Report, etc. proponent will form Environmental Management Committee (EMC) & Horticulture Committee (HC).

10.4.2 Horticulture Committee (HC) & its Responsibilities

A team will be formed named as “Horticulture Committee” (HC) to attend the issues relating to cleanliness, up keeping, aesthetic beauty of the project site, general environment enhancement, tree plantation, vegetation’s promotion, planting of flowering and ornamental plants/trees in and outside of project site.

- To attend the issues relating to cleanliness
- To upkeep, aesthetic beauty of the project site
- To look after general environment enhancement
- Tree plantation, vegetation’s promotion, plantation of flowering and ornamental plants/trees in and outside of project site.

10.5 Proposed Monitoring Program to Assess Performance or output of EMP

Environmental monitoring is normally undertaken during both construction and operational stages to ensure the effectiveness of the proposed mitigation measures. In order to respond to unexpected environmental concerns at an early stage and to determine the accuracy of impact, predictions are also required. Specific monitoring programs are outlined below as well as responsibilities for the collection and analysis of data and the reporting requirements.

The various objectives of the environmental monitoring plan are:

a. To evaluate the effectiveness of mitigation measures,

b. To respond to the unanticipated environmental impacts when the project is under implementation.

10.5.1 Construction stage

While construction stag of the proposed project environmental monitoring including air quality, noise level, ground water & wastewater will be done and detail is as follows:

a. Air Quality:

An ambient air quality monitoring will be done on monthly basis or as prescribed by the EMC, in the construction stage at the representative locations.

1. CO
2. NO
3. NO_2
4. NO_x
5. SO_2
6. PM_{10}

b. Noise Level

Noise level monitoring will be done on monthly basis or as prescribed by the EMC, in the construction stage at the representative points.

c. Ground Water Quality:

Ground water quality monitoring will be done on monthly basis, in the construction stage at the representative locations. The following parameters will be monitored.

1. pH
2. Total Dissolved Solids
3. Turbidity
4. Taste
5. Odor
6. Total Hardness
7. Chloride
8. Sulphate
9. Sodium
10. Calcium
11. Magnesium
12. Potassium
13. Nitrate
14. E-coli

d. Wastewater Quality:

Wastewater quality will be monitored on monthly basis in the construction stage. The following parameters will be monitored.

1. Temperature
2. pH

3. DO
4. BOD_5
5. COD
6. TDS
7. TSS
8. Grease & Oil
9. Copper
10. Iron
11. Sulphate
12. Chloride

10.5.2 Operational Phase

During operational phase of the proposed project environmental monitoring including stack emissions, noise level, ground water & wastewater will be done and detail is as under:

a. Stack Emissions Monitoring:

Stack emissions (from standby power generator(s) and Boiler(s) monitoring will be done on quarterly basis in the operational phase. The parameters of stack emissions prescribed in National Environment Quality Standards (NEQS) approved by the Government of Pakistan will be monitored as follows:

1. O_2
2. CO_2
3. CO
4. NO
5. NO_2
6. No_x
7. So_x
8. Temperature

b. Noise Levels:

Noise levels monitoring will be done on quarterly basis while operational phase of the project at different pints of / near boundary wall, outside production halls & at other representative points.

c. Groundwater Quality:

Groundwater quality will be monitored on annual basis while operational phase of the project. The following parameters will be monitored:

1. pH
2. Total Dissolved Solids
3. Turbidity
4. Taste
5. Odor
6. Total Hardness
7. Chloride

8. Sulphate
9. Sodium
10. Calcium
11. Magnesium
12. Potassium
13. Nitrate
14. E-coli

d. Wastewater Quality:

Monitoring of wastewater analysis will be done on quarterly basis during the operational stage for the parameters given below or as prescribed by the NEQS:

1. Temperature
2. pH
3. DO
4. BOD5
5. COD
6. TDS
7. TSS
8. Grease & Oil
9. Copper
10. Iron
11. Sulphate
12. Chloride

10.6 Proposed EMP Reporting and Reviewing Procedure

The Environment Management Team will be responsible for environmental monitoring and reporting to the EPA Punjab throughout the construction and operational stages and for the implementation of Environmental Management Plan in the unit.

EMP Reporting & Reviewing Procedures emphasize that the EMP should set forth in sufficient detail all the design measures, monitoring programs, best management practices, and emergency and contingency plans to assure best that all the potential impacts are methodically controlled and suitably mitigated. In addition to reviewing the EIA report recommendations, the management of the industry should compare these documents and plans to the guidelines for such Industrial units in its evaluation of what is applicable or otherwise should be included in the EMP. Employee educational and training materials to be submitted to best for their review 3 weeks prior to the beginning of staff training.

10.7 Training Needs

Proper training will be provided to the construction workers on health and safety practices and conservation of resources by the contractor. During the operational stage, the project staff will be trained about the requirements of Environmental Management System, including but not limited to the environmental health and safety efficient use of resources, emergency response, fire protection and safety /

security issues etc.

10.7.1 Technical Training Programs

In order to raise the level of professional and managerial staff, they need to upgrade their knowledge in the related areas. The Environmental Management Team will play a key role in this context.

Contractor's environmental awareness and appropriate knowledge of environmental protection is critical to the successful implementation of the EMP because without appropriate environmental awareness, knowledge and skills required for the implementation of the mitigation measures, it would be difficult for the contractor(s) to implement effective environmental protection measures. A domestic training program is proposed to train the staff that will be involved in the construction and operational stage on environmental protection and management.

10.7.2 Training Schedule

One of the most important mechanisms for the enhancement of the project's overall environmental performance is to organize environmental trainings for the project personnel and the Contractor's team. Environmental training will form part of the ongoing environmental management of the project. Contractor's environmental awareness and appropriate knowledge of environmental protection is critical to the successful implementation of the EMP because without appropriate environmental awareness, knowledge and skills required for the implementation of the mitigation measures, it would be difficult for the Contractor(s) workforce to implement effective environmental protection measures. Adoption of these measures will help Proponent and the Contractor to achieve a high level of environmental awareness in the project team, which should, in turn, promote sound environmental management during project lifespan.

A training schedule will be developed by the Health & Safety manager and organized and maintained by the management of the project and contractors. Following is the comprehensive form of the training schedule;

Table 10.4: Training Schedule

Provided by	Trainee	Contents	Duration	Responsible Authority
Environmental Manager & Training Assistant	All Working Personnel	▪ Environmental laws and regulations, daily monitoring and supervision ▪ Introduction to project EIA and EMMP ▪ Importance of safety practices and usage of PPEs ▪ Environmental sensitivities of the project area ▪ Communication of	Monthly	Project Management & Contractor

		environmental problems to corresponding officials ▪ Waste disposal		
Consultants / specializing in social management	Staff dealing in social matters	▪ Short seminars and courses on social awareness ▪ Effective public speaking / dealing	Monthly	Project Manager
Drivers	As specified	▪ Follow speed limits ▪ Road safety ▪ Road restrictions ▪ Vehicle / driving restrictions ▪ Applicable rules & regulations ▪ Defensive driving	Twice a month	Project Management & Contractor
Consultants / organizations specializing in occupational, health and safety issue	As specified	▪ Short lectures relating to occupational safety and health	Twice a year	Project CEO

10.8 Equipment and Instruments maintenance details

The project proponent will create their own system, i.e. equipment for monitoring of air, water and noise or hire the services of a private laboratory for the monitoring and analysis. The company management will maintain the records of Environment, Health & Safety and look after the EHS issues. The company management shall maintain PPEs, firefighting arrangements, conduct trainings as mentioned above and medical / first aid.

10.9 Environmental Management Plan

The Environmental Management Plan (EMP) provides the framework for the implementation of mitigating measures and environmental management and monitoring during the construction and operational stages of the project. This document contains all commitments made in the EIA Report and can be used as a reference document to ensure that all environmental protection measures are implemented. This annotated outline presents information, which is included in the proposed Environmental Management Plan.

The detailed Environmental Management Plan having statement of impacts, setting of targets to achieve goals to protect environment, suggestion of mitigation measures and assigning of responsibilities in the Table 10.5 at the end of this section.

Table 10.5: Environmental Management Plan (EMP)

Sr. No.	Project Component or Impact	Target	Action	Responsibility
DESIGN STAGE				
a. Physical Environment				
1.	Emergency Response	Incorporate in design of building emergency exits and routes and to mitigate emergency conditions	The following mitigation measures will be adopted to minimize or eliminate the emergency situations: ▪ The design of building will also include emergency exits which can be used during emergency situation emergency routes/pathways will also be well marked. ▪ Adequate internal and external water distribution system will be designed, which could also supply adequate quantity of water for firefighting during emergency. ▪ Firefighting arrangements including fire hydrant system connected with adequate water reservoir, fire extinguishers (DCP, AFFF, CO_2, etc.), Sand Buckets, fire alarm system (automatic & manual), smoke detectors, heat detectors, gas detectors, etc. will be provided at many locations where necessary.	Design Consultant / Proponent
b. Ecological Environment				
2.	Impacts on Flora	To avoid negative impact and undertake beautiful landscaping after construction	▪ Construction (alteration & renovation activities) will be done in such a way to avoid any negative impact on flora of the site if any present as landscaping as well as outside of the premises. ▪ Beautiful landscaping including grown trees, ornamental / flowering plants & grassy lawns will be done on available open spaces in and outside/around the project site after completion of project.	Design Consultant / Proponent
3.	Impacts on Fauna	To ensure that fauna may be affected at minimum level	▪ Alteration & renovation activities for the development of project will be done in such a way fauna within the site and outside the premises may not be disturbed or minimized the negative effects to an acceptable level. ▪ Best and latest technology will be selected which have low operational noise.	Design Consultant / Proponent

			▪ Proper foundations will be constructed with rubbers for shock / vibration absorbers to avoid tremor / vibration which may increase the noise level. ▪ Trees will be planted around the building as buffer zone and which will act as sound barrier too. ▪ Beautiful landscaping including grown trees, ornamental / flowering plants & grassy lawns will be done on available open spaces in and outside/around the project site after completion of project which may attract fauna (wild birds) to nest here.	
c. Socio-economic Environment				
6.	Changes in Land value	Not required	▪ This will be minor positive impact and not required any mitigation measure.	Design Consultant / Proponent
CONSTRUCTION STAGE				
a. Physical Environment				
1.	Impacts on Air Quality	To implement mitigatory measures to avoid any negative impact on ambient air	▪ Regular water sprinkling will be done on construction material like sand, soil/clay etc. and exposed areas of site for civil construction/excavations. ▪ Construction machinery will be maintained or overhauled in time to avoid any negative impact from their smoke especially standby power generator.	Contractor / Proponent
2.	Disposal of Construction Solid Waste	To avoid degradation of soil	▪ The construction waste will be carefully examined and disposed off in an environment friendly manner by transporting it in closed containers and filling at appropriate sites. ▪ It is also desirable to utilize the waste in such a way that it is consumed for the construction of any other structure within the Project Site or in the immediate vicinity.	Contractor / Proponent
b. Ecological Environment				
3.	Impacts on Flora	To avoid negative impact on flora of surroundings	▪ Construction (alteration & renovation activities) will be done in such a way to avoid any negative impact on flora of the site if any present as landscaping as well as outside of the premises. ▪ Beautiful landscaping including grown trees, ornamental / flowering plants & grassy lawns will be done on available	Contractor / Proponent

			open spaces in and outside/around the project site after completion of project.	
4.	Impacts on Fauna	To ensure that fauna may not be disturbed	▪ Construction (alteration & renovation activities) will be done in such a way to avoid any negative impact on fauna (birds) of the site if any present as well as outside of the premises. ▪ Beautiful landscaping including grown trees, ornamental / flowering plants & grassy lawns will be done on available open spaces in and outside/around the project site after completion of project. ▪ Landscaping may attract the fauna (wild birds) to nest here.	Contractor / Proponent
c. Socio-economic Environment				
5.	Employment Generation	Not required	▪ Employment generation will be positive change.	Contractor / Proponent
6.	Health and Safety of Workers	To ensure health & safety of construction workers, visitors and member of public	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; ▪ Proponents 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 an accident. ▪ First aid kits and other necessary equipment will be kept available at site along with the list of emergency phone numbers to be contacted in case of any accident. ▪	Contractor / Proponent
OPERATIONAL STAGE				
a. Physical Environment				
1.	Air Quality	To avoid degradation of air and to comply with PEQS	In order to minimize air pollution, following mitigation measures are recommended: ▪ An air quality monitoring and improvement plan will be developed to keep the air pollution level within the limits of Punjab Environmental Quality Standards (PEQS) ▪ Standby power generators will be placed at concrete	Factory Management / Proponent

			foundation equipped with shock absorber rubbers, sound proof canopy, silencer, smoke arrestor and stack with proper height. ▪ Maintenance and overhauling schedule will also be developed. ▪ Standby power generator and boiler will be maintained or over hauled well within time according to schedule and periodically checked or inspected to avoid any excessive smoke. ▪ No leak system by proper maintenance of valves, seals & flanges ▪ Well capped containers ▪ Good housekeeping,	
2.	Noise	To mitigate the noise problem	▪ Proper foundation of the plant machinery, standby power generator & boiler will be designed to cope with the problem of tremor / vibration which will consequently abate the noise problem. ▪ Noise level monitoring plan and improvement plan will be developed and implemented with letter & spirit. ▪ The standby power generators and boilers will be over hauled and well tuned according to the schedule to avoid excessive noise. ▪ 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.	Factory Management / Proponent
3.	Water Consumption	To ensure that project operation may not exert any negative change on water table	▪ At open places the grassy lawns will be developed to recharge the water table which is help to control the surface runoff during rainy season. ▪ More landscaping will also be done at available open place after completions of project ▪ The overall nature of the area is agricultural it is also help to recharge the water table.	Factory Management / Proponent

			▪ Water to be used in production hall will be re-used/re-cycled. ▪ The workers will be given training to avoid wastage of water. ▪ Regular inspection of water tapes, valves and water lines as per schedule or periodically will be undertaken.	
4.	Wastewater Generation	To ensure to comply with NEQS	▪ Chemical + Biological type of WWTP / ETP with capacity of 100,000 gallons / day will be installed for the treatment of the wastewaters to fulfill the compliance of PEQS. ▪ After treatment, the treated wastewater will be disposed off into wastewater channel.	Factory Management / Proponent
5.	Solid Waste Generation	To establish proper management plan for safe disposal of solid waste	▪ The recyclable waste including yarn corn, lose thread, empty carton, packaging waste, polythene bags, wood, etc. will be handed over to EPA Approved waste contractor. ▪ Organic waste to be produced from kitchen / will be handed over to mess contractor who then will dispose off properly as per local Govt. policy like MSW wastes. ▪ A track record of solid waste will be maintained.	Factory Management / Proponent
6.	Emergency Response	To prepare emergency plan and proper procedures to cope with emergency conditions	▪ A comprehensive Emergency Response Plan (ERP) for emergency / fire conditions and disastrous situations will be developed and implemented whole heartedly during the operational phase of the project. ▪ Sufficient / appropriate firefighting arrangements such as Central fire hydrant system, fire extinguishers, fire alarm systems, heat detectors, smoke detectors, sand buckets, etc. have been placed / installed at many necessary locations in the unit. ▪ Firefighting arrangements have been undertaken according to the requirements of Civil Defense Department and international standards. ▪ Emergency assembly points are marked and factory workers are trained to cope with any emergency situation. ▪ Regular training workshops & emergency / fire drills of workers are scheduled to be held regularly. ▪ All firefighting, emergency and safety equipment shall be	Factory Management / Proponent

			frequently checked and properly maintained. ▪ Safety signs, emergency exits, emergency routs will be displayed & mentioned at many / appropriate places. ▪ Emergency exits and routs will be kept clear from obstacles to avoid any hurdle / panic while emergency condition.	
b. Ecological Environment				
7.	Impacts on Flora	To avoid negative impact and undertake beautiful landscaping after construction	▪ Beautiful landscaping including grown trees, ornamental / flowering plants & grassy lawns will be developed at available open places in the proposed unit. ▪ To avoid any negative impact on flora of the site and flora of project area / outside area, air emissions and wastewater quality will be monitored and kept controlled within PEQS limits.	Factory Management / Proponent
8.	Impacts on Fauna	To ensure that fauna may not be affected	▪ Best and latest technology will be selected which have low operational noise and emissions. ▪ Proper foundations will be constructed with shock / vibration absorbers to avoid tremor / vibration which may increase the noise level. ▪ Trees will be planted around the building as buffer zone and play as sound barrier. ▪ Beautiful landscaping including grown trees, ornamental / flowering plants & grassy lawns will be done on available open spaces in and outside/around the project site after completion of project which may attract the fauna (wild birds) to nest here. ▪ Noise level monitoring plan will also be developed to control excessive noise to avoid any negative impact on fauna which may disturbed them.	Factory Management / Proponent
c. Socio-economic Environment				
9.	Employment Generation	Not required	▪ Employment generation will be positive impact.	Factory Management / Proponent
10.	Generation of Revenue	Not required	▪ Generation of revenue or taxes which will be paid to Govt., will be positive impact.	Factory Management / Proponent

11.	Health and Safety of Workers	To ensure health & safety of workers by giving them proper information, instructions, training, supervision and provision of complete PPEs according to the nature or requirement of their jobs	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. ▪ The workers will be given information, instruction, training and supervision specific to their job and / or nature / requirement of their work, in safety precautions and procedures. ▪ Protective clothing and equipment comprising helmet of cloth cap, safety spectacles or goggles, respirators or masks, rubber or plastic gloves and safety shoes 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. ▪ To avoid any potential environmental hazards the workers would be trained properly so that they know the potential hazard of chemical. ▪ Proper cross ventilation shall be undertaken 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 suitable / prominent places. ▪ Adequate supply of water shall be made available to the workers for personal washing as well as for washing their protective equipment. ▪ Protective clothing and equipment 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.	Factory Management / Proponent

			▪ First aid medical facility 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.	

Section 11: STAKEHOLDERS CONSULTATION

11.1 General

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

In order to evaluate the socioeconomic and environmental impacts, field surveys are extremely essential. In addition to the surveys at the preliminary stage, consultation with the community and their active participation plays a vital role in successful implementation of the project. To identify the different types of stakeholders and ascertain their perceptions about the establishment of the proposed project (socks manufacturing unit) located at 49-Km Multan Road, Phool Nagar, District Kasur, an Impact assessment survey was conducted. Informal group discussions were also held as an additional tool for obtaining feedback from the stakeholders that are being discussed in the following pages.

11.2 Objectives of Consultation

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

Public Consultation is a mandatory part of the EIA process for development projects. It is a tool used for communication with a diverse group of stakeholders having multifarious aims such as information dissemination, exchanging views, soliciting feedback and suggestions on issues pertaining to the project, plan future actions. The adequacy of the public consultation and information disclosure is one of the basic criteria used to determine the project compliance with the national / international safeguard policies.

The consultation process was carried out in accordance with the requirements of Pakistan Environmental Procedures. The objectives of this process were to:

- Inform the public about what is proposed project
- Identify and involve all stakeholders, especially local residents, in the consultative and participation process
- Share information with stakeholders on the design and construction of the proposed project and anticipated impacts on the physical, biological and socioeconomic environment of the project area
- Understand stakeholders' concerns regarding various aspects of the project, including the existing available facilities and problems, construction of the

project and the likely impacts (positive & negative) of construction and operation related activities
- Understand the perceptions, assessment of social impacts and concerns of the communities in the vicinity of the proposed project
- Provide an opportunity to the public in the public consultation session to provide valuable suggestions for the project design in a positive manner
- Reduce the chances of conflict through the early identification of controversial issues, and consult them to find acceptable solutions.
- This section describes the outcome of the public consultation sessions held with different stakeholders that may be directly or indirectly affected by the proposed project.
- Information dissemination, education, and liaison;
- Identification of problems and needs;
- Collaborative problem solving;
- Reaction, comment and feedback on proposed project;
- Documenting mitigation measures proposed by the stakeholders;

11.3 Methodology

The EIA Team carried out public consultations at various locations around the proposed project Site. For ascertaining the perceptions of different stakeholders about the project (during construction/operation) consultation meetings were held with them in the vicinity of the proposed project. Consultation was carried out in order to establish stakeholder's opinion regarding project implementation. The methods used for public consultation with project stakeholders include Scoping Sessions, Formal Meetings, Informal Meetings and Individual Interview. All the stakeholders were briefed about the project verbally. Their feedback was noted, and all the concerns voiced in the discussion were relayed to the management team of the project.

The stakeholders' consultation during this phase of the work targeted the project area, administrative and private offices, Government offices, shops, etc. near the Project area:

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

11.4 Categories of Stakeholders Consulted

The stakeholders contacted during the survey belonged to different categories of people are as under:

11.4.1 Proponent's Environment Management Team

Possible potential impacts and mitigation measures related to the proposed

project while its construction / developmental and operational phases were discussed in detail with the project proponent / company management. They assured to undertake all suggested mitigation measures to control or eliminate or minimize to an acceptable level any anticipated potential impact generated by the proposed project and to make the subject project environment friendly. The environmental management team of the proponent was made aware of their responsibilities which include;

- Oversee daily activities of team members to maintain environmental management system (EMS)
- Ensure that industrial operations are in compliance with local, state and federal environmental regulations
- Follow and enforce environmental policies and procedures.

11.4.2 The Responsible Authority

The proponent or its management is the responsible authority to take all mitigation measures to safe guard the environment before or prior to commence the project.

11.4.3 Other Departments and Agencies

For the analysis of anticipated potential impacts detailed meetings were held with the company management, local community surrounding of the site at Multan Road, etc. Issues were discussed that might affect the environment and also the implementation of proposed project. All possible mitigation measures were considered and incorporated in the Environmental Management Plan (EMP) provided in this EIA Report.

Scoping sessions, focused group discussion and way side consultations were held with the relevant stakeholders in the area. The purpose of such consultation is to obtain feedback from relevant person.

11.4.4 Environmental Practitioners and Experts

Environmental expert's team of M/s Sustainable Environmental Solutions (SES) visited the proposed project site / area, had discussions with stakeholders and consulted with the local people of nearby and other villages to evaluate the project socio-economic impacts. People of the area belong to different professions like mostly belong to employment, own business, doctors, lawyers, some in abroad, government employees, teachers, in agriculture, etc. People provide the massive information about the project and have positive remarks regarding the project development.

11.4.5 Affected & Wider Community

There is no affected community present in the radius of the study area. SES team has consulted the people of surrounding the project site especially at Multan Road. The people provided positive remarks regarding the proposed project.

Stakeholders participation Performa's / socio-economic questionnaire were get filled by the people to evaluate the project impacts especially socio-economic impacts. Stakeholders Performa / socio-economic questionnaire attached as appendices with this EIA Study.

11.5 Consultation Meetings and Formal & Informal Group Discussions

Among all stakeholders some major stakeholders were identified in the proposed project area. Consultation meetings regarding project impacts, their magnitude and mitigation measures were held with the Management of company, environmental practitioners, local residents around the project or in close vicinity of the project site or project area, pedestrians, general public, customers and pedestrians to know their concerns regarding proposed project. Scoping sessions and meeting were conducted with these stakeholders. Generally, it was found that people were already aware of the proposed project because the project is to be located in the area where various industries are being established there time to time. Majority of the stakeholders showed their full support for the proposed project.

Following are the other concerns/ suggestions of the stakeholders;

- Exposure of noise and dust pollution will cause disturbance and health & safety issues to the local residents and other stakeholders throughout the construction stage due to the movement of construction machinery and transportation of construction materials. The effects of noise and dust pollution on the local residents should be minimized by making necessary arrangements. Dust pollution should be controlled by water sprinkling on regular basis.
- Due to the movement of loaded trucks during the construction period of proposed project, congestion on the access road will increase. Proper diversion route rather than access road should be clearly defined to avoid traffic blockage during the entire construction period.
- Local residents should be given priority for jobs during construction as well as operational phase of the project
- Public utilities should not be disturbed. Arrangements should be made to minimize the disruption of public utilities or should be rehabilitated on priority basis to reduce the impacts.
- A detailed health and safety plan must be developed to mitigate the construction and operational risks of the proposed project
- Solid waste and wastewater produced during construction and operational phases should be disposed of timely and appropriately.
- Overall activities of the project;
- Possible impacts on natural vegetation, land and properties;
- Possible mitigation measures;
- Benefits of the project specifically for the local people.

Mitigation measures proposed by EIA consultants for addressing the stakeholder's concerns are as follows;

- Significant efforts including change in design should be adopted to minimize

the physical and economical disturbance of the local residents.

- Local residents should be given priority while hiring manpower during construction and operational phases of the proposed project.
- Construction machinery should be placed at adequate locations away from the sensitive areas to minimize the impacts related to the noise.
- Project facilities should be located outside the existing residential areas. In order to avoid restricting the daily movement of the local stakeholders; construction vehicles should remain confined within their designated areas of movement
- The utilities to be shifted due to the implementation of the proposed project should be rehabilitated on priority basis to minimize the impacts on the stakeholders. Landscaping must be done.
- Solid waste and wastewater generated during construction at site should be disposed of safely and in an appropriate manner to not impact the environment
- All necessary measures should be taken to ensure the safety of traffic during construction, including barricades (including signs boards, pavement markings, flags, and lights).
- Dust and noise levels should be kept to minimum employing the best suitable and effective mitigation measure
- The construction activities must be confined within the project site boundary

11.6 Findings of the Overall Discussion

- After the completion of the proposed project the site will be used for industrial activities.
- The proposed project will help to fulfill the increasing demand of ingots and billets.
- It will enhance the socioeconomic conditions/values of the area
- Project will increase revenue generation for the Government
- It will create employment opportunities
- Local people should be given preference for employment in the proposed project
- Construction of the proposed project should be completed in the designated timeframe to limit adverse impacts of construction.
- It will provide the employment to the people
- It will give a lift to national economy in due course

Majority of people favored the proposed project in a sense that the construction of the proposed project will fulfill the vital need of ingots and billets, generate employment opportunities and revenue for the government and enhance the socioeconomic conditions of the area.

SECTION 12: CONCLUSION AND RECOMMENDATIONS

12.1 Conclusion

There are many concerns i.e. legal, social, economic, cultural and environmental on the proposed socks manufacturing unit namely M/s Mima Knit (Pvt.) Ltd. located at 49-Km Multan Road Phool Nagar, District Kasur.

The impacts during all of three stages design, construction and operation of the proposed project such as impacts on physical environments including changes in land use/appearance, seismic hazard, soils/geology, impacts on topography, impacts on air quality, noise pollution, impacts on groundwater, water consumption, wastewater generation, solid wastes, emergency conditions; ecological environment including impacts on flora & fauna and socio-economic environment including health and safety of workers, etc. have been considered and estimated/assessed in the light of nature of project, production process, visit of project site & area and stakeholders / public consultation including interviews, comments & feedback.

Baseline environmental and socio-economic information has been collected from a variety of sources including survey of the project area, private offices, government departments and published literature. Collected information has been used to compose the environmental profile likely to be effected by the project. Details of these impacts have been discussed in the preceding section of this study.

The impact of the planned activities in the project area will be insignificant. Necessary mitigation measures proposed in the report have been made part of the project activities.
After the:

- Survey of the project site area;
- Collection of baseline data,
- Study of impacts during design, construction and operational phases and their mitigations.
- The intellectual expertise and experiences have been incorporated in preparation and suggesting mitigation measures by the EIA Study preparation team.
- The mitigation measures suggested in the EIA Report is sufficient to complete and run the project in an environment friendly manner.
- Sustainability has also been ensured by recommending extensive plantation / landscaping after the completion of project.

It has been concluded that the proposed project is feasible at the proposed site from physical, ecological & socio-economic environmental point of view after implementation of mitigation measures suggested in Section 6 & EMP of this EIA Study. The mitigation measures are sufficient to ensure the sustainable development.

12.2 Recommendations

Following recommendations are suggested to protect the environment and for the safe development and operation of the proposed project while its construction & operational phase as well as for existing unit:

- Environmental Management Plan and Monitoring Plan (EMMP) suggested in EIA Report should be strictly followed and operational throughout the project life. All monitored data should be reported to the EPA Punjab, Lahore for scrutiny at their end.
- Effluent Treatment Plant / Waste Water Treatment Plant must be installed for the treatment of wastewater producing from the proposed project for compliance of PEQS ultimately for the safeguard of environment.
- Solid waste management plan including safe storage, segregation (on site or off site by contractor), transportation and safe disposal should be developed and track record will be maintained.
- Environmental Monitoring plan including air quality monitoring, wastewater analysis and noise level should be developed and implemented to keep all the parameters within the limits of Punjab Environmental Quality Standards (PEQS) and specially to evaluate the performance of mitigations and control devices such as ETP, Firefighting arrangements, PPEs, etc.
- Emergency Response Plan (ERP) must be developed and implemented with letter & spirit.
- ERP should be reviewed and update as necessary, periodically or annually.
- Sufficient / appropriate firefighting arrangements according to the requirements of Civil Defense Department and international standards should be done.
- All firefighting arrangements including fire extinguishers, fire hydrant system connected with water reservoir, sand buckets, smoke detectors, heat detectors, fire alarm system etc. must be arranged.
- Above mentioned firefighting arrangements should be inspected periodically as per schedule and maintained.
- Safety signs, emergency exits, emergency routs should be displayed & mentioned at many / appropriate places.
- Emergency exits and routs must be kept clear from obstacles to avoid any hurdle / panic while emergency condition.
- The workers should be provided with complete PPEs according to the nature or requirement of their jobs including Protective clothing / apparel and others comprising face masks, rubber or plastic gloves and safety shoes and no worker shall be permitted to perform their job unless and until he is wearing such protective clothing and PPEs.
- All workers should be thoroughly trained in environment, health & safety precautions.
- Adequate supply of water should be made available to the workers for personal washing as well as for washing their protective equipments.
- Protective clothing and equipment of the workers should be washed and cleaned as often as required to ensure their efficiency.
- No worker should be permitted to eat or drink at work place & till he has removed his protective clothing and equipment, washed his hands and face

and left the place of work.

- First aid boxes equipped with required antidotes should be available in the premises, supervised by trained staff.
- Medical checkup of all workers should be carried out at the time of employment and at least once a year thereafter.