IHSAN COTTON PRODUCTS (PVT) LIMITED ENVIRONMENTAL IMPACT ASSESSMENT REPORT



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Executive Summary

Title & Location of the project

Subject project for which this Environmental Impact Assessment (EIA) Study has been conducted is the Extension of Dyeing unit and construction of Effluent Treatment Plant within the existing building of M/s IHSAN Cotton products (PVT) limited, at 4-Km, Manga Raiwind Road Lahore.

The extension project falls under Schedule II of Review of IEE and EIA Regulations, 2000. TORs of the study under clause 5 (f) of policy and procedure for the filing, review and approval of environmental assessment are annexed as ***Annexure –A.***

Location

Subject project is located at 4-Km, Manga Raiwind Road Lahore.

Project land coordinates are as follows:

Front: Road

Back: Industrial Unit

Left: Industrial Unit

Right: Empty Plots

For further details, layout map of the project is attached as ***Annexure-B*** with the report.



Figure 1: Aerial view of the proposed project site

Name of the proponent

Name: Mr. Muhammad Afzal

Designation: Proponent

CNIC: 35202-3054817-7

Mailing Address: PIA co-operating Housing society, House No 87, Block E Lahore,

For further details CNIC of the proponent and other relevant documents are attached with this report.

Name of organization preparing the report:

Pak Green Enviro-Engineering (PVT.) Ltd, as independent consultants, has been appointed by the proponent to conduct Environmental Impact Assessment Study.

Company office address: 46-M, Gulberg III, Lahore

Contact: 042-35441444, 0303-4442335.

For detail company profile see the *Chapter # 1 "Introduction"*

A brief outline of the proposal

Name of the project:	The project is Extension of Dyeing unit and construction of Effluent Treatment Plant within the existing building of M/s IHSAN Cotton products (PVT) limited, at 4-Km, Manga Raiwind Road Lahore
Location of the project:	4-Km, Manga Raiwind Road Lahore
Proposed Area:	Total area for dyeing unit is 54,174SFT and for ETP is 2821SFT has shown on attached map
Nature of Project:	Nature of the project is Extension of Dyeing unit and construction of Effluent Treatment Plant within the existing building. At the time of visit, project site was an open plot and no constructional activities had been started at the designated area. The capacity of dyeing unit is: Yarn dyeing(4ton/Day), Towel dyeing (4ton/Day), Socks dyeing & bleach (2400kg/Day). The capacity of ETP is 40 m^3/hour.

Cost of the project:	Total cost of the project will be approx. 50 million pkr.
Power Requirement:	Power requirements of the project would be 5.89 Mega Watts.
Labor/ Workforce:	During construction: 150 (estimated) During Operation: 60-70 (estimated)
Water Requirement:	During the constructional phase of the project approximately 500-gallon water will be required per day for constructional and domestic uses. During the operational phase of the project approx. 40 m3/hour water will be required for dyeing unit, capacity of ETP would be 40 m3/hour, after treatment in ETP water will be disposed of into nearest drain, management has obtained permission letter for safe disposal of treated water into drain and copy of approval is attached as ***Annexure D.***
Solid waste:	Approx. 200-300 kg/day constructional and domestic waste will be produced during the constructional phase of the project. During operation: 2000kg/day domestic and project related waste will be generated.

The major impacts

In order to identify all the activities associated with the project during construction and operation phase with potential to cause adverse environmental impacts and harm a thorough review has been conducted. Project will not have any significant adverse impacts on the nearby community and on environment. Overall, the project will have positive impacts on the local population and country as a whole. Moreover, area for plantation is also reserved for air purification within the project vicinity

Table: Summary of Environmental and social impacts of the project during the construction phase and mitigation measures suggested:

Potential Impact	Criteria for determining Significance	Key Mitigation Measures
Dust Emissions— Dust and PM may be generated during road construction and excavation activities. Gaseous emissions from site generators and transportation vehicles may affect ambient air quality in the vicinity of the project site.	An increase in visible dust beyond the boundaries of the construction site or Concentration of PM_{10} in excess of 150 $\mu g/m^3$ PEQS for Ambient Air	Sprinkling of water on dusty roads, tracts and surfaces is recommended; During excavation works drop heights will be minimized to control the fall of materials reducing dust escape; Use of wind shield around stockpiles is recommended; Vehicle speed restrictions should be applied in the project area; Raw materials should be transported in covered trucks;
Solid waste Management— If solid waste will not be managed properly, it may cause negative impacts	Generation of excessive waste; Recyclable waste and reusable waste are discarded, Littering, Improper disposal.	Constructional waste should be utilized for road filling and maintenance purposes; Domestic waste should be disposed off properly, handed over to contractors, placed in bins; Proper solid waste management plan should be devised and implemented.

Waste water - water used in construction process and excessive water generate as wastewater and it also produced from campsite domestic activities	PEQS parameters	Waste water after treatment should be drain out in nearby drain
Construction Noise- Noise may be generated during landscaping activities and from generators and transportation vehicles at the project site; which may be a nuisance for the workers.	OSHA standards	Activities generating high levels of noise should be minimized at the project site. If the noise level will exceed the permissible limits with reference to national and OSHA standards, following recommendations are suggested to take action against the high noise levels: • Proper tuning of construction machinery and vehicles is recommended. • Ear muffs and ear plugs are recommended in case of high noise levels. • Rubber wounds should be placed underneath the generator to avoid the vibration (in case of installation of generators)
Vegetation Loss/ Soil erosion— Minor negative impact may arise as only some weeds and grasses are present at the	Unnecessary or excessive removal of trees and shrubs.	No tree cutting/ vegetation loss issue will be involved in the subject project as project site is free of any dense vegetation and trees. Preparation of a Reinstatement Plan to restore the land after the

project site which will be cleared for the purpose of construction.		constructional activities is recommended.
Soil Contamination—Oil and Chemical spills can contaminate the soil.	Presence of visible amount of hydrocarbon in soil	Provision of spill prevention and control kits; Use of impermeable surfaces in workshops, and storage areas; Contaminated soil will be collected and incinerated.
Traffic issues- Traffic issues may arise due to the constructional activities at the project site if traffic will not be managed properly.	TEPA rules	Speed limit of 10 km/h should be maintained on the access road; Ample parking area must be allocated at the project site. Guards should be hired to manage the traffic at the project site.
Socioeconomic impacts—Inter-cultural differences between the project staff from other areas and the local community may arise due to the subject project. Positive socioeconomic impacts due to increased infrastructure, employment opportunities and economic growth.	No community complaints. Increased employment facilities in the area; Increased infrastructure	Training of the non-local project staff on local culture and norms; Avoidance of unnecessary interaction of local population with the non-local project staff. Employment opportunities should be provided to the local people.

Table 1: Summary of Major Impacts & their Proposed Mitigation during Operational Phase

Potential Impact	Criteria for determining Significance	Key Mitigation Measures
Impact due to Location	Seismic Region and flood Zone Specification	There are no significant negative impacts on the environment due to the project location/ selected site, because the project is present in existing area of already established industrial unit, having no significant impact on the surrounding industrial unit and community.
Gaseous Emissions- During the operational phase of the project, gaseous emissions from project site generator may affect the air quality of the project area.	PEQS for Ambient Air	Industry should ensure the PEQS compliance and should not be allowed to emit hazardous pollutants. Proper tuning of generator should be done to avoid the excessive gaseous emission from the generator (if installed) Vehicle emissions inspection should be done on regular basis. Sprinkling should be done on the unpaved area to avoid dust pollution/ particulate matter.
Noise- Noise due to industrial activity, machinery and generators can be a nuisance for the workers in the working area.	OSHA Standards	Activities generating high levels of noise should be minimized at the project site. Personal Protective Equipment PPEs including Ear muffs, Ear plugs and other noise abating equipment will be provided to the workers and other staff in case of noise at the project site. Proper maintenance and tuning of the vehicles should be done.

		Sound proof rooms should be built for generators to be installed at the project site to control the noise.
Discharge of wastewater- The discharge of untreated municipal wastewater may be a negative impact of the subject project.	PEQS for Municipal Effluents (mg/l, unless otherwise defined)	Wastewater must be treated before its discharge. Compliance of PEQS for effluents should be ensured. Monitoring should be conducted as per PEQS and reports should be submitted to EPA.
Health & Safety Issues- different constructional and operational activities at the project site may cause health and safety issues for workers if precautionary measures will not be adopted.	OSHA Standards	Proper training of workers and staff should be conducted to avoid the accidents. Use of PPEs should be implemented at workplace. First aid measures/medical facility should be provided at the project site. Safe drinking water must be provided to workers, staff, and poor people of the area. Safety signs & boards should be placed
Solid waste management- If solid waste will not be managed properly, it may cause negative impacts.	Exposure to potentially hazardous waste; Generation of excessive waste; Recyclable waste and reusable waste are discarded; Littering.	A solid waste management division should be formulated to deal with the proper disposal of solid waste, supervised by HSE Manager, SW Manager, and other related personnel

Proposed Environmental Monitoring

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

- **Ambient Air**

  Monitoring for ambient air should be conducted on regular basis during constructional phase of the project and report should be submitted to EPA Punjab.

- **Noise**

  Regular monitoring for noise level should be maintained periodically during construction and operation phases of the project and report should be submitted to EPA Punjab.

- **Water quality**

  Regular monitoring of water quality should be conducted on regular basis during construction and operation phases of the project and report should be submitted to EPA Punjab. Record should be maintained regarding the underground water pump and consumption.

Recommendation: Environmental Monitoring data log book should be maintained by the project proponent.

CHAPTER # 1

INTRODUCTION

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

Purpose of the report

Environmental Impact Assessment (EIA) report is being submitted to the Environmental Protection Agency (EPA), Government of the Punjab, Lahore for the compliance of Section 12 of Punjab Environment Protection Act-1997 (Amended 2012) for obtaining No Objection Certificate (NOC) before starting the construction activity at the project site. The other relevant regulations and guidelines considered while preparing this EIA report include:

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

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

Identification of the project and proponent

The project falls under Clause-9 of category-B of Schedule II of Review of IEE and EIA Regulations, 2000.

Proponent:

Name: Mr. Muhammad Afzal

Designation: Proponent

CNIC: 35202-3054817-7

Mailing Address: PIA co-operating Housing society, House No 87, Block E Lahore,

For further details CNIC of the proponent and other relevant documents are attached as with this report as ***Annexure C.***

Details of Consultant

Pak Green Enviro-Engineering (PVT.) Ltd is an independent company, who conducts IEE, EIA, EMP and other environmental investigations through its panel of environmental consultants, public participation practitioners and experienced environmental managers. The company has its own recommended instruments to check the baseline environmental data/PEQS and lab analysis facility for water, waste water priority parameters.

Contact: Pak Green Enviro-Engineering (PVT.) Ltd.
Office No. 46-M, Gulberg III, Lahore
Tel: 042-35441444, 03034442335
Email: info@pakgreen.pk; pak.green@hotmail.com

The current study was carried out by the following professionals:

Sr. No.	Designation	Name/Qualification	Experience
1	Chief Environmentalist/ Lead Environmental Professional	**Abdul Hafeez Nasir** PhD Scholar Environmental Management	Twelve Years' Experience as Environmentalist
2	Senior Environmentalist/ Environmental Professional	**Iftikhar Ahmed** M.Phil. Environmental Sciences	Eight Years' Experience as Environmentalist
3	Sr. Environmental professional	**Iqra Amjad** M.Phil. PU, Lahore	4 Years' Experience as Environmentalist
4	Environmental professional	**Faiza Anjum** M.Phil. PU, Lahore	2 Years' Experience as Environmentalist
5	Environmental professional	**Amna Aftab** BSc. UET, Lahore	06 month' Experience as Environmental Engineer

Brief description of Nature, Size and Location of Project

Subject project is the Extension of Dyeing unit and construction of Effluent Treatment Plant within the existing building of M/s IHSAN Cotton products (PVT) limited, at 4-Km, Manga

Raiwind Road Lahore. Project area is industrial in nature and many other industrial units are already in process of establishment and operation in the surroundings. The capacity of dyeing unit is: Yarn dyeing(4ton/Day), Towel dyeing (4ton/Day), Socks dyeing & bleach (2400kg/Day Total area for dyeing unit is 54,174SFT and for ETP is 2821SFT has shown on attached map.

Location

Subject project is located at 4-Km, Manga Raiwind Road Lahore.

Project land coordinates are as follows:

Front: Road

Back: Industrial Unit

Left: Industrial Unit

Right: Empty Plots

For further details, layout map of the project is attached as ***Annexure-B*** with the report.

Scoping

Spatial and Temporal Boundaries of Environmental Assessment

The project falls in Industrial area of district Lahore. Total area for dyeing unit is 54,174SFT and for ETP is 2821SFT. Various Industrial Units are already present around the vicinity of the project corridor. The main road along with the project site is Lahore-Manga Road. The following map shows the spatial and temporal boundaries of the project. For further details Google earth map of the project on A3 page is attached as ***Annexure-E*** with the report.



Figure 2: Aerial view of the proposed project site

Important issues and concerns raised during consultation

Important issue and concerns raised by the community during consultation include the impact of waste water released from the treatment plant that may impact the nearby community. The Proponent ensured that treated effluent from the treatment plant will be within limits of the PEQS and then disposed of into the Nullah Drain RD 13-14/R. Hence will not cause any issues to the community The community was also concerned about employment for local people. The proponent made sure that maximum job opportunities for plant management and dyeing unit operation will be provided to the residents.

Significant Impacts to be determined

There can be impacts related to release of waste water containing dyes and other toxic chemicals into the nearby area. The proponent ensured the installation of effluent treatment

plant to treat the wastewater and then the safe disposal into Nullah Drain RD 13-14/R. Sludge produced if not disposed off properly can become a nuisance for nearby community especially due to its odor generation

CHAPTER # 2

DESCRIPTION OF THE PROJECT

Type and Category of the Project:

The project is Extension of Dyeing unit and construction of Effluent Treatment Plant within the existing building of M/s IHSAN Cotton products (PVT) limited, at 4-Km, Manga Raiwind Road Lahore. Project falls under Schedule II of Review of IEE and EIA Regulations, 2000. TORs of the study under clause 5 (f) of policy and procedure for the filing, review and approval of environmental assessment are annexed as ***Annexure – A***

Objectives of the Project

Objectives of the Extension the subject project are:

- To establish the business for the proponent.
- To contribute to the national economy of the country.
- Compensate to help poverty by providing employment.

Location and site layout of the project:

Subject project is located at 4-Km, Manga Raiwind Road Lahore. Project land coordinates are as follows:

Front: Road

Back: Industrial Unit

Left: Industrial Unit

Right: Empty Plots

For further details, layout map of the project is attached as ***Annexure-B*** with the report.



Aerial view of the proposed project site

Land Use on site

Area for the construction of the subject project is an empty plot free of any activity and it is the property of the proponent.

Road Access

Paved road at the south side of the project area is present which directly connect to Lahore-Manga Road.

Cost and magnitude of the operation

The project is Extension of Dyeing unit and construction of Effluent Treatment Plant within the existing building of M/s IHSAN Cotton products (PVT) limited, at 4-Km, Manga Raiwind Road Lahore. Total area for dyeing unit is 54,174SFT and for ETP is 2821SFT has shown on attached map. Total cost of the project will Approximately 50 million. There are no other associated activities with regard to the subject project.

Schedule of Implementation

Detailed feasibility studies and designing of the project must be done. Necessary legal, administrative and financial formalities are being finalized. The project is expected to be completed within 11-12 months from the date of environmental approval. Subsequently the operational and maintenance aspects of the project will be undertaken by the proponent.

Description of the project:

The project is Extension of Dyeing unit and construction of Effluent Treatment Plant within the existing building of M/s IHSAN Cotton products (PVT) limited, at 4-Km, Manga Raiwind Road Lahore.

Description of the Dyeing Process:

Dyeing Unit consists of following processes.

- Half Bleach Process
- Reactive Dyeing Process
- Vat Dyeing Process

Half Bleach Process

Half Bleach process carried out in following steps.

- Yarn sent to Chemicals Machine via Stock tank and Dosed with Caustic Soda in 10 Minutes and Runtime is 30 minutes at 80-100 °C to Machine HT Drain.

- **Hot Wash:** After dosing sent to machine drain which has Runtime of 10 minutes 80 °C
- After hot wash it sent to Acid Machine via Stock tank and having runtime of 20 minutes at 60 °C to Machine Drain.
- Then its Cold Wash for 10 minutes.

Reactive Dyeing Process

After half bleach process, next step is Reactive dyeing process.

- After half bleach it sent to Leveral Machine via stock tank and having Runtime of 10 minutes at 40 °C.
- Add the Dyes to Addition tank and Mix Well.
- Dose Dyes in 20 minutes to Machine and Runtime is 20 minutes at 40 °C.
- Inject Salts in 10 minutes to machine and Runtime is 30 minutes at 40 °C.
- Dose Soda Ash/Caustic Soda in 20 minutes to Machine and Temperature up 60C and Runtime 60°C 60’ to 10 min overflow Machine drain.
- Sent to Acid machine via stock tank and Runtime 60°C 20’ to machine drain.
- Sent to Detergents machine via stock tank and Runtime 80-100°C 10’ to Machine drain.
- Cold wash 10 mints and overflow 10 mints.
- Dose fixer 10 mints to machine and Runtime 60°C 30’ to Machine drain.
- Softener process 50°C 30’
- Cold wash and Lot unload.

Vat Dyeing Process

After Reactive dyeing process, next step is Vat Dyeing Process which is stated below.

- Sent to Chemicals(AUX) Machine Via Stock Tank and Runtime 60°C10’.
- Add the Dyes to Addition tank and Mix Well.
- Dose Dyes in 30 minutes to Machine and Runtime 60°C20’.
- Dose Caustic Soda in 20 minutes to Machine and Runtime 60°C20’.
- Dose Leveral in 10 Minutes to machine and Runtime 60°C20’.
- Dose BASF in 10 Minutes to machine and Runtime 60°C 60’ to 10 minutes overflow Machine drain.
- Cold Wash in 10 Minutes.
- Oxidation: Sent to Hydrogen peroxide Machine via Stock tank and Runtime 60°C30’ to 10 min overflow machine drain.

- Sent to Chemicals (Detergents, Soda) machine via stock tank and Runtime 100°C 20’ to Machine Drain.
- Hot Wash at 80°C for 10 minutes.
- Rinse in 10 min and Cold wash 10 min to machine drain.
- Unload

Raw Material and End product:

Raw material used in dyeing process is Poly Flock L, Polymer and Acid. In dyeing process, yarn undergoes to different dyeing processes as described earlier and end products are dyed socks and towels.

List of Chemicals:

Different types of chemicals used in dyeing process like:

- SUNFIX L/YELLOW S4GL 15%
- SUNFIX G/YELLOW S3R 15%
- SUNFIX RED S3B 150%
- SUNFIX NAVY SPD
- SUNFIX BLUE RS
- SUNZOL BLACK B 150%
- SUNZOL TURQOISE BLUE G 150%
- SUNZOL ORANGE S2R 100%
- SUNZOL BLACK DN
- SUNFIX BLUE SBR 150%
- INDANTHRENE OLIVE T
- INDANTHRENE BROWN RN
- INDANTHRENE BROWN G
- INDANTHRENE YELLOW F3GC
- INDANTHRENE BLUE RCL
- INDANTHRENE RED FBB
- INDANTHRENE GREY 5607
- SYNOLONE YELLOW EXW
- SYNOLONE RED EXW
- SYNOLONE NAVY EXW
- SYNOLONE BLUE EXW

- SYNOLONE BLACK EXW
- FIBERLUB K SOFT
- HYDROGEN PEROXIDE
- CASTIC SODA
- SODA ASH
- Hiwet RGT
- Rucos LASE EPE
- Rucostab OKP
- AERO Soft HST
- SERA QUEST CPX
- RUCOLASE EPE 122N
- ACETIC ACID
- BRIGHT FC
- FLORA WHITE
- SODIUM HYDRO SULPHATE
- SERA SPERSE CSN
- SERA GAL CVP
- Argafix T24C
- Common salt

These are the chemicals which are used in dyeing process. Their MSDS are attached in ***Annexure-F***

Machinery List of Dyeing unit List

All machines name, weight and quantity mentioned in this list.

Yarn dyeing:

1. One Thies Machine 1000kg
2. One Thies Machine 200kg
3. One Ugolini Machine 5kg

Towel dyeing:

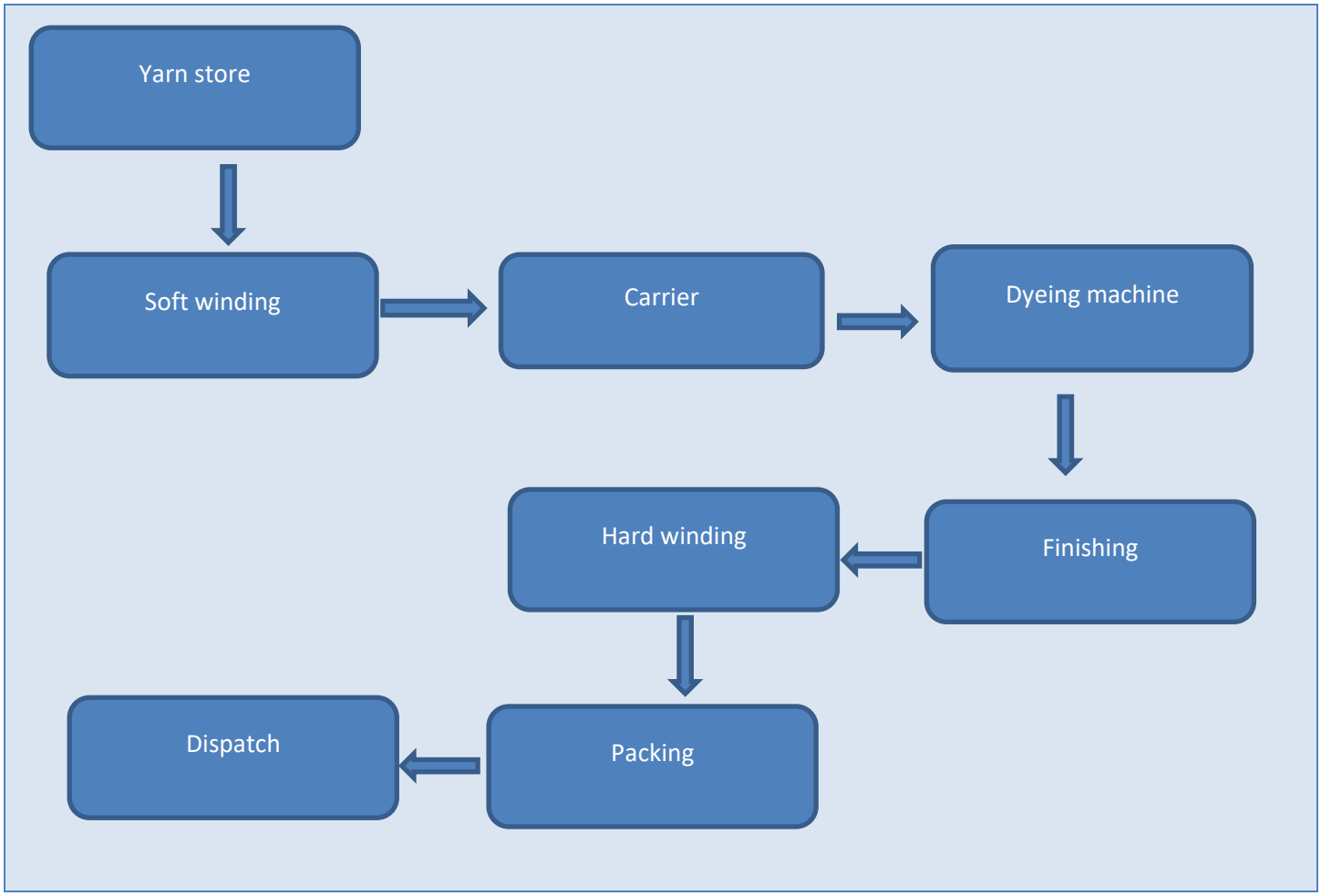
4. One HT dyeing Machine 20kg
5. One HT dyeing Machine 200kg
6. One HT dyeing machine 800kg

Socks dyeing:

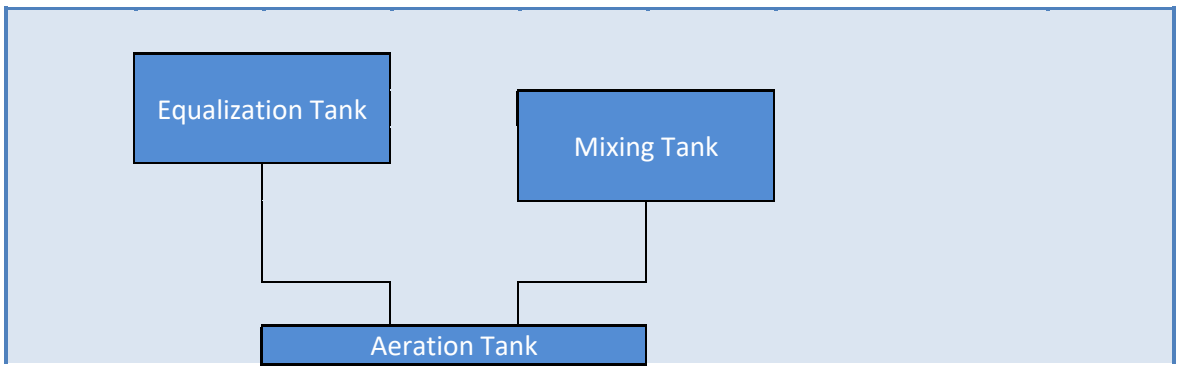
7. One Poly Craft 400kg
8. One Poly Craft 200kg

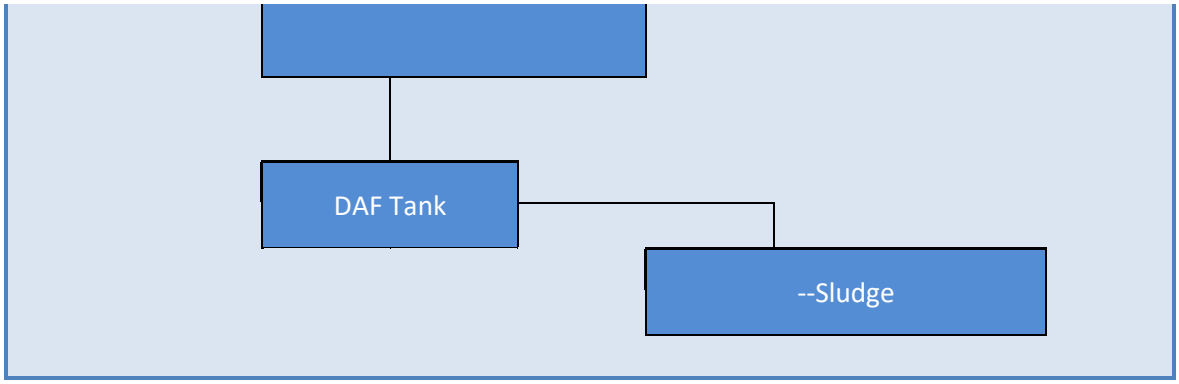
9. One Poly Craft 10kg

Dyeing Process Flow Diagram



ETP Process Flow Diagram





Water requirements:

During the constructional phase of the project approximately 500-gallons water will be required per day for constructional and domestic uses.

Treatment capacity of proposed treatment plant is 40 m^3/hour.

Waste water treatment:

60-70% of the used water will be the waste water which will be treated in wastewater treatment facility. No wastewater will be disposed of into any water body prior to the treatment in treatment facility.

Wastewater Drain:

A nearby drain is present near the project site, in which wastewater will disposed off after treatment in the wastewater treatment facility, approval for safe disposal is attached herewith.

Solid waste:

Approx. 200-300 kg/day constructional and domestic waste will be produced during the constructional phase of the project. Constructional waste will be reused for road filling and maintenance purposes.

According to an estimate, approx. 2000kg/day domestic and project related solid waste will be produced during the operation phase of the project (based on solid waste generation rates of 0.45 kg/capita/day urban waste generation). Project related waste will include yarn, threads etc. and ETP waste will include sludge etc. which will be handed over to the certified contractors, a third part contract has been made and copy of contract is attached as ***Annexure G.***

Solid waste management system/practices

The Solid waste will be managed in proper way by following operations:

1. Placement of separate waste bins for domestic and project related waste in all working halls and designated points.
2. Collection of waste from all the working halls at one designated point by the sanitary workers on daily basis.
3. Careful collection of ash and sludge on regular basis and temporary storage at designated point.
4. Collection of waste from designated area and handling to the solid waste contractors for its final disposal.

Flow chart of solid waste management plan:

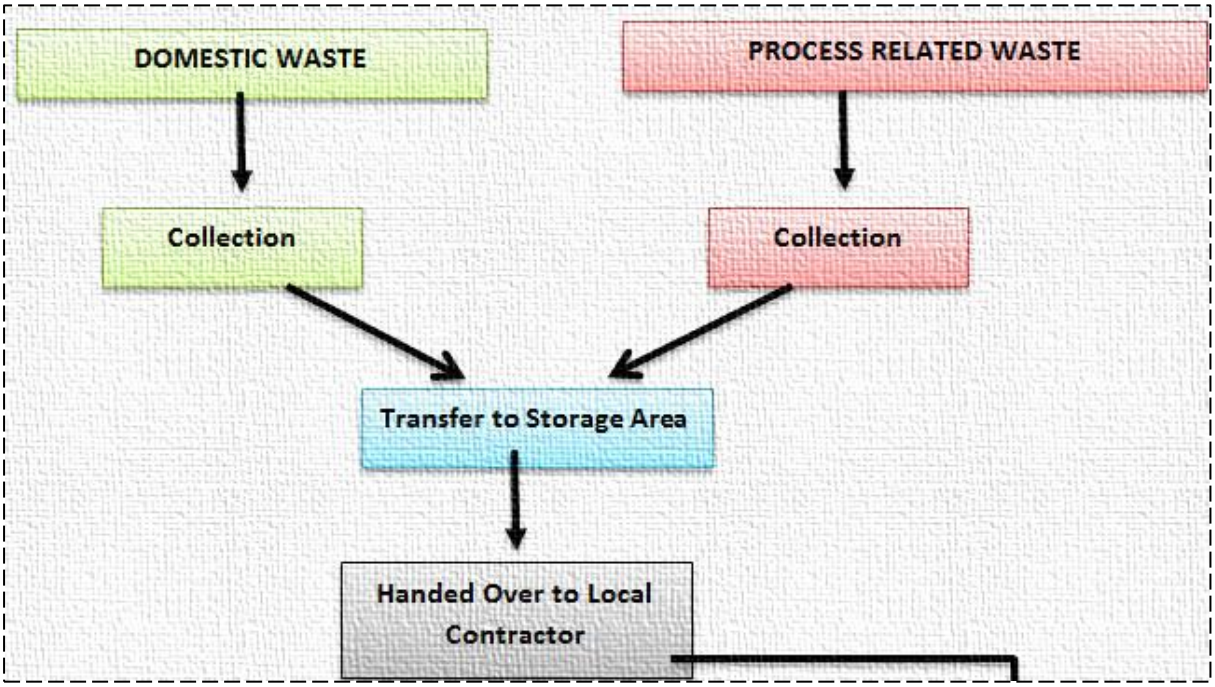


Figure: Solid Waste Management Plan

Ventilation system for maintenance of indoor air quality:

Roof overhangs, window size and placement, and overall building shape will be designed in a way to ensure good ventilation. Further the direction of prevailing winds will be considered and maximum solar gain will be ensured. The placement of porches, garages, trees will also be ensured.

Mitigation measures to control the emissions of generators:

i) Firstly, the generator made up of latest and environmentally friendly technology will be used (if needed)

ii) Standard fuel will be used in the generator (if any)

iii) Proper and regular tuning of the generator will be done (in case of installation)

iv) Double glazed glass and thick walls canopy of the generators will be installed which will limit the emissions of the noise.

All these measures will ensure the PEQS compliance of generators and emissions will not exceed the limits.

Parking Area

Parking area will be made available within the unit for cars, motorcycles, trucks etc.

Occupational Health and Safety:

All the methods and procedures for machinery and chemical handling and storage will be displayed and implemented at the project site. Health and safety rules for chemical handling and storage will be maintained.

Personal Protective Equipment:

Following PPEs will be available for the workers in the unit:

- Dust Mask
- Ear Plugs
- Ear muffs
- Safety Boots
- Safety Gloves
- Safety Belt
- Helmet
- Goggles

Types of PPEs used during construction and Operational activities

Protection	Occupational Hazards	PPEs
Head Protection	Falling objects, inadequate height clearance, and overhead power cords	Helmets with or without electrical protection
Hand protection	Hazardous material, cuts or lacerations, vibrations, extreme temperatures	Synthetic or Rubber gloves, leather, insulating material etc.
Eye and face protection	Flying particles, molten metal, liquid chemicals, gases or vapors, light radiation	Glasses, shield protective, etc.
Hearing protection	Noise, ultra sound	Hearing protectors like ear plugs, ear muffs
Respiratory protection	Dust, fogs, fumes, gases, smokes, vapors, oxygen deficiency	Facemasks or air supply
Body protection	Extreme temperatures, hazardous materials, biological agents, cutting and laceration	Aprons, insulating clothing etc. of appropriate materials

Fire Protection System

An addressable fire protection system with detection and alarm annunciation and other installations etc. would be provided to protect against any fire hazards. Fire buckets and fire extinguishers will be installed at all sensitive places within the unit.

Emergency Exits:

Emergency exit points will be made available for easy evacuation in case of any emergency. Emergency response plan has been formulated for M/s IHSAN Cotton products (PVT) limited and same will be followed for said extension, copy of the plan is attached as ***Annexure H.***

Security:

The site will be secured by means of boundary walls along with the presence of security guards round the clock which will improve the security of the project site and also in its vicinity.

Personal protective equipment:

Workers will be provided with dust mask, ear plug, ear muffs, safety boots, safety gloves, safety belt, helmet and goggles etc. during the working hours to ensure personnel health & safety. Implementation of PPEs will be ensured by the proponent for the proposed project also.

Industries:

Project is located in the industrial area of district and many industries are present around the project site.

Power sources and transmission:

Estimated power requirements of the unit will be will be fulfilled by in house power generation

Available Facilities

Available facilities at the proposed project site include:

- Solid Management (SWM)
- Line and cellular telephone facilities
- Water supply, sewerage disposal and drainage systems

Restoration / Rehabilitation Plan

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

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

CHAPTER # 3

DESCRIPTION OF ENVIRONMENT

Description of Environment

This section describes the baseline conditions, which cover the existing Physical, ecological and socio-economic environment of the project as well as study area. Data was collected by reviewing secondary data and field survey.

Physical Environment/ Resources

Topography:

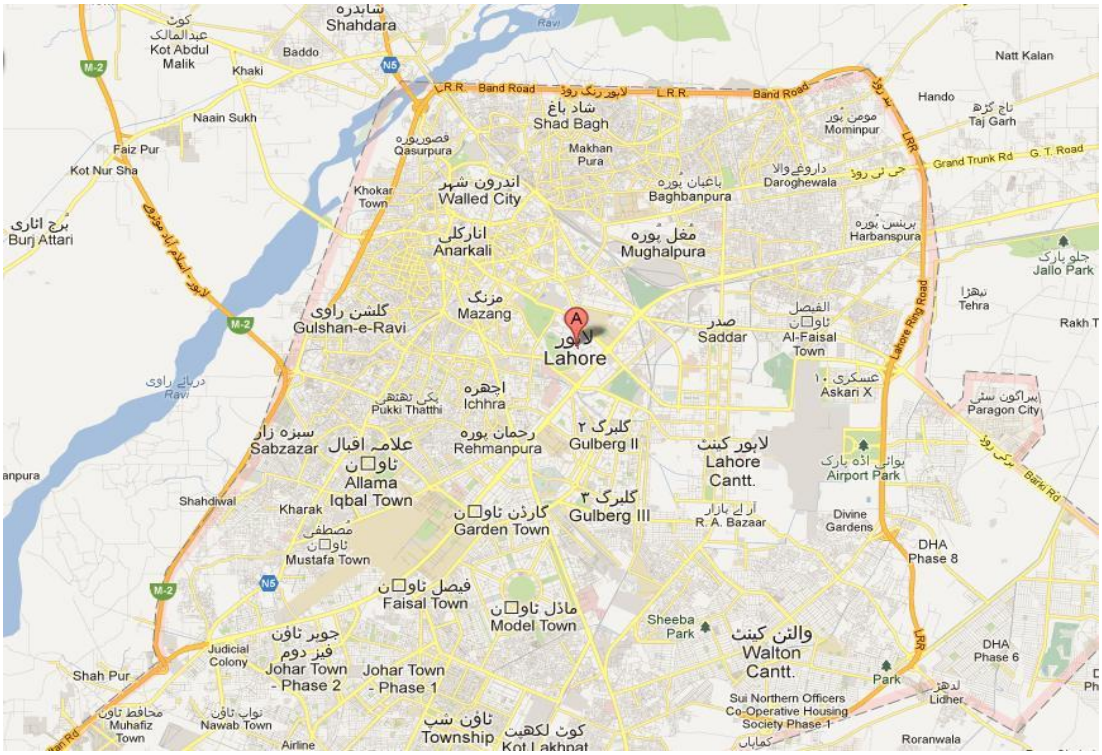
The second largest province of Pakistan is Punjab comprising 205,344 km2 area, next to Baluchistan and is located between latitudes 27.42º and 34.02º N and longitudes 69.81º and 75.23º E at the northwestern edge of the geological Indian plate in South Asia. Punjab, etymologically it is the land of five rivers namely the Sutlej, Ravi, Chenab, Jhelum and the Indus (Govt. of Punjab, 1994). Four out of these five rivers are the tributaries of the Mighty Indus River. The province comprises fertile river valleys, while sparse sandy deserts are found as extensions of Rajasthan desert (India) and the Sulaiman Range (Pakistan), including the Cholistan and Thal deserts. The Indus River and its tributaries pass through the Punjab from North to South. The landscape is largely irrigated with a network of canals all over the province. Intensity of the weather is noticeable from hot and infertile southern region to cool Himalayan Mountains in the North. The variation in temperature and rain fall occur throughout the year, however, the temperature hardly exceeds the limit of 46ºC according to metrological records. All soil types, i.e., sandy, clay and loamy are found in the province (Ahmad, 1986). The population of the province has been estimated as 70 million by the Punjab-World Gazetteer (2009) and about half of the population of Pakistan is owned by Punjab consisting of diverse tribes and communities, sometimes known as castes. Punjabi is the common language of Punjab.

Topography of the project area:

The proposed site is plain area having boundary walls. Soil will be used for the filling of the plots an there will be no vegetation clearing at the site.



Map of Lahore District wise



Lahore Map

Soils:

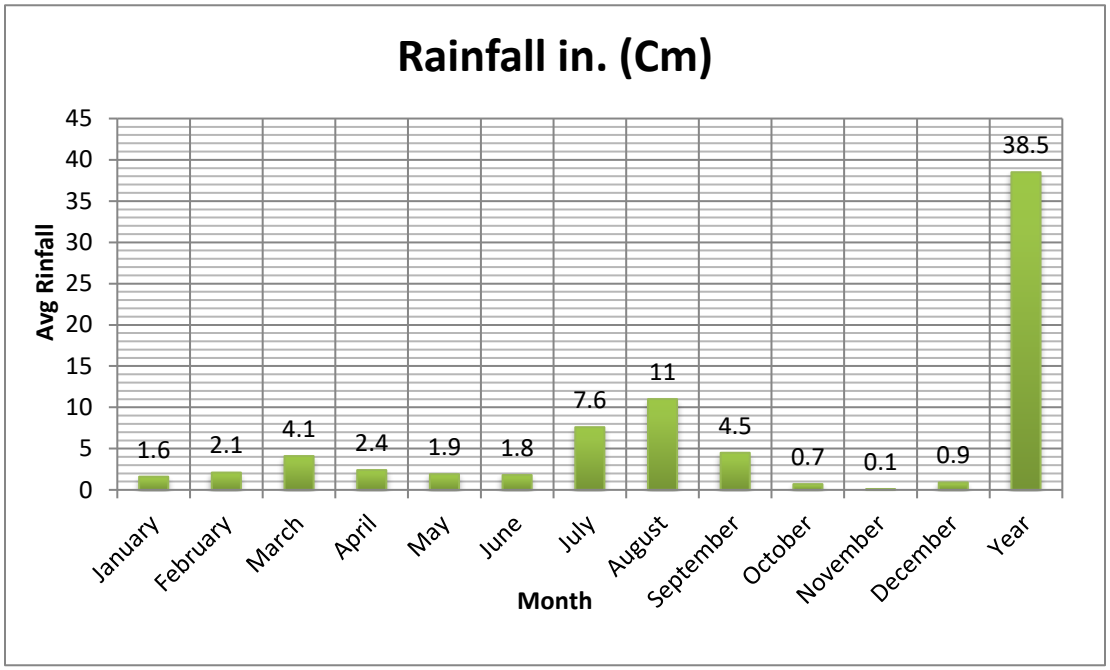
The soil of the area is quite thick and fairly homogeneous in extent. The top soil consists of brown, soft to firm clayey silt / silty clay having slight plasticity and contents of dissolved salts. The top layer is likely to extend about 3 to 6 meter below natural ground, where it is underlain by silty fine sand/fine sand. This layer generally continues to deeper depths. These layers of silty clay and sandy gravel may also exist below 10-meter depth.

Climate:

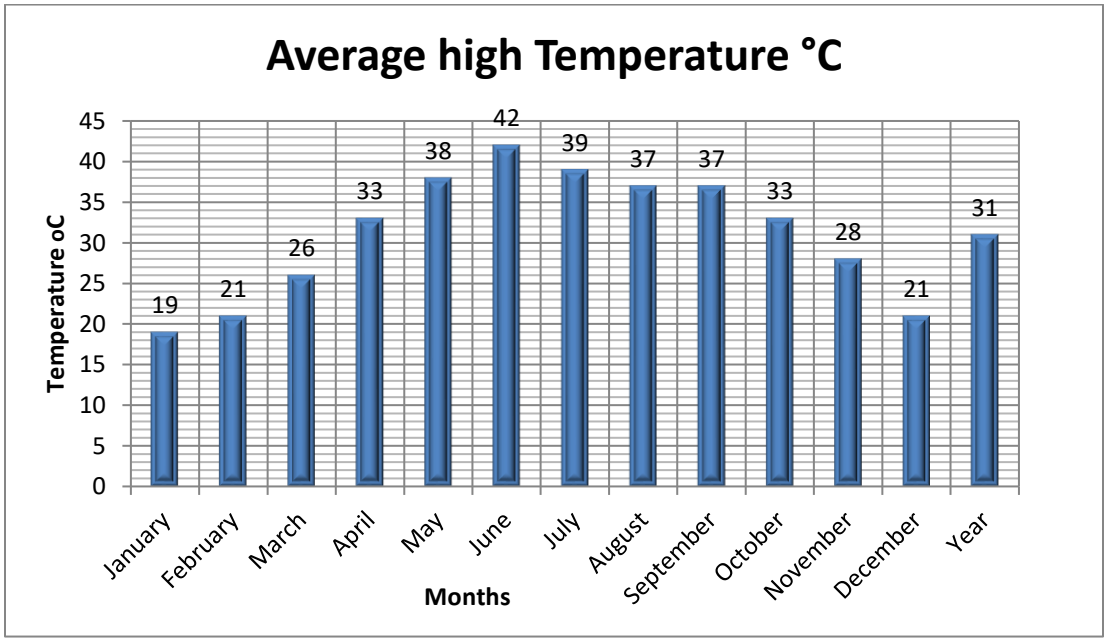
Lahore has extremes of climate; the summer season begins from April and continues till September. June is the hottest month. The mean maximum and minimum temperature for this month are about 45 and 27 degree Celsius respectively. The winter seasons lasts from November to February. January is the coldest month. The mean maximum and minimum temperatures for the coldest month are 22 and 0 degree Celsius respectively. Rainfall Towards the end of June monsoon conditions appear and during the following two and a half months the rainy season alternates with sultry weather. The winter rain falls during January, February and March ranging from 23 to 31 millimeters.

Month	Average high Temperature °C	Average low temperature °C	Rainfall in. (Cm)
January	19	03	1.6
February	21	06	2.1
March	26	12	4.1
April	33	17	2.4
May	38	22	1.9
June	42	27	1.8
July	39	27	7.6
August	37	26	11
September	37	23	4.5
October	33	16	0.7
November	28	09	0.1

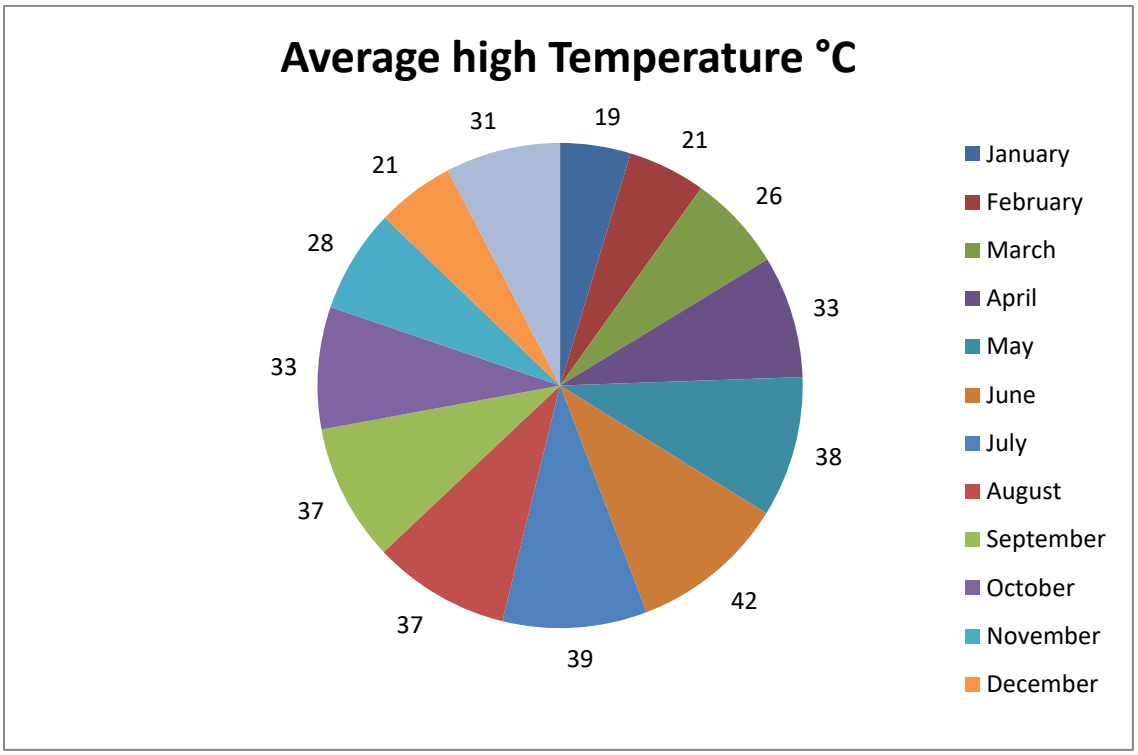
December	21	04	0.9
Year	31	16	38.5



Graphical representation of average rainfall



Graphical representation of Average High Temperature



Ambient Air Quality:

The project is located in industrial estate of District Lahore. The major sources of air pollution in the area are surrounding industries and transportation or vehicular traffic.

To record the baseline ambient air quality of the project area, monitoring was conducted at advised locations to assess the concentration of priority pollutants (Carbon monoxide, Nitrogen dioxide, Sulphur dioxide and PM_{10}) in the air.

Instruments used for monitoring Ambient Air Quality.

Ambient air monitoring was conducted by using recommended ambient air quality analyzer as shown in figure. Results have been given in below table. Laboratory report is annexed also as ***Annexure-I***



Fig: Ambient Air Quality Analyzer

Particulate Matter (PM_{10})

For PM_{10} mini volume air sampler was used. In PM_{10} Sampler air is drawn into the omnidirectional inlet head at a flow rate of 16.67 LPM. The air is then accelerated toward the first impaction stage where particulate with aerodynamic diameters greater than 10mm are collected (filtered out). The air stream, carrying particulate 10 microns and smaller, continues down the inlet toward the second impaction stage where particles larger than 2.5 microns are collected. Finally, particulate 2.5mm and smaller continue down the inlet where they are collected on a 46.2 mm diameter, ring supported filter media disc.

Laboratory report is annexed also as ***Annexure-I***

Discussion of Results

The ambient air result was within the PEQS Limits during the monitoring hours. The ambient air quality was monitored during the working hours, the surrounding industries and traffic was operational.

Noise Level Monitoring:

Basic Environmental conditions:

During the measurement following conditions were prevailed on workplace



Metrological Conditions:

During the noise level monitoring weather was dry and sky was clear. Air was blowing at normal speed

Monitoring Instrument:

The description of the instrument used for the noise level monitoring is given below:

Name: Digital sound level meter

Model: AR824

Company: Intel Instruments plus

Calibration:

Self-calibration time: 10 sec (every turn on)

Specification:

- ✓ Resolution: 0.1 dB
- ✓ Overall Range: 30 to 130 dB "A", 35 to 130 dB "C"
- ✓ Sound Level Ranges: 30-80 dB, 50-100 dB, 60-110 dB, 80-130 dB
- ✓ Basic Accuracy: +/-1.5 dB
- ✓ Sampling Frequency: 2/sec

Methodology adopted:

Noise level measurements were carried out in a way that monitoring round was completed in one go.

Sources of Noise Pollution

Major sources of noise generation are industrial unit and vehicular traffic along the road. Noise levels were monitored at proposed project site. The noise levels are falling in the range of 63-71 dB (A).

Laboratory report is annexed also as ***Annexure-I***

Discussion of Results

The noise level results were within the PEQS Limits at all Points during the monitoring hours. Results can exceed the prescribed limit for the short time due to traffic and nearby industrial noise generation.

Ground water:

Underground water is available and its quality is satisfactory. The underground water is supplied by pumping system (motor pump, tube well, hand pump) to the industry by the Industrial area. Water quality is good at the depth of 700-900 ft while the upper-level water has biological, Arsenic and other contamination. Laboratory report is annexed also as ***Annexure-I***

Discussion of Results

It was a grab sample taken by the team of Pak Green Laboratory; the results can vary with the time and duration.

Waste water of the subject project will not be chemically contaminated because waste water will be generated only from the domestic source (septic tank) and will be treated at PEQS.

Demographics

Population

According to the 1998 census, Lahore's population was 6,318,745. Mid-2006 government estimates put the population at somewhere around 10 million, which makes it the second largest city in Pakistan, after Karachi. It is considered to be one of the 30 largest cities of the world.

Language

Punjabi is the native language of the province and is the most widely spoken language in Lahore. Punjabi is the primary means of communication in both the city and adjoining peri urban areas. Punjabi has no official status in Lahore and some Punjabi activists has raised demands for recognition of Punjabi. English has become increasingly popular with educated and younger people due to its official status in government and preferred language status for business. Many Punjabi speakers in Lahore are known as Majha Dialect of Punjabi. According to the 1998 census, 86.2% or 6,896,000 of the population are Punjabis; 10.2% or 816,000 are Urdu speakers and the Seraikis, at 0.4%, number about 32,000.

Ecological Resources

Fisheries:

The project area is almost free from any commercial fishing activity. There are no lakes, even natural water ponds near the project site Therefore, Fishery or any worth mentioning aquatic biology in this area is out of question.

Biodiversity:

Natural capital of a country mainly includes all of the country's wilderness areas and scenic landscapes, including also with their 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 are 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.

Flora:

Common trees present in and around the S.I.E include:

- Acacia modesta- locally known as **Phulai**

- Acacia Arabica- locally known as **Kikar**
- Alstonia scholaris - locally termed **ditabark**
- Bombax malabaricum- locally termed **sunbal**or **silk cotton tree**
- Callistemon citrinus - locally termed **bottle brush**
- Dalbergia sissoo - locally termed **shisham**
- Delonix regia - locally termed **gulmohar**
- Erythrina suberosa - locally termed **coral** or **gul nister**
- Ficus benghalensis - locally termed **banyan**
- Ficus religiosa - locally termed **pipal**
- Ficus retusa - locally termed **bobari**
- Kigelia pinnata - locally termed **gul-e-fanoos** or **sausage**
- Livistona chinensis - locally termed **bottle palm**
- Mangifera indica - locally termed **aam**
- Mimusops elengi - locally termed **molsery**
- Pongamia pinnata - locally termed **sukh chayn** or **Indian beech**
- Syzygium cumini - locally termed **jamu**
- Ziziphus zizyphus - locally termed **jujube**





The above pictures have been taken by Abdul Hafeez (Environmentalist/Ecologist) in the project area. The above pictorial plants are native plants of the Punjab and are confined to protected area i.e. grave yard etc. these plants should be promoted because they have key role in the ecosystem of the Punjab.

Fauna:

There are number of birds, reptiles and mammals are present in the project area but there is no protected species.





Rare or endangered species:

There are no game reserves or protected lands/areas or endangered or rare species in the subject area.

Social and Cultural Study

Education:

Lahore is known as Pakistan's education capital, with more colleges and universities than any other city in the country. Lahore is Pakistan's largest producer of professionals in the fields of science, technology, IT, engineering, medicine, nuclear sciences, pharmacology, telecommunication, biotechnology and microelectronics. Most of the reputable universities are public, but in recent years there has also been an upsurge in the number of private universities. The current literacy rate of Lahore is 74%.Lahore hosts some of Pakistan's oldest educational institutes: Government College Lahore (now Government College University), established in 1864; Forman Christian College, a chartered university established in 1864; University of the Punjab, established in 1882; Kinnaird College, established in 1913; and University of Engineering and Technology, Lahore (UET Lahore), established in 1921. UET is also Pakistan's oldest technical degree-awarding institute and its first university in the field of engineering and technology.

Lahore's institutes in the fields of computer science, IT, and engineering include the Punjab University of Computer and Emerging Sciences (NUCES or FAST-NU) and Punjab University College of Information Technology. Notable architecture schools include Beaconhouse Punjab University, COMSATS Institute of Information Technology, University of South Asia, Punjab College of Arts and University of Engineering and Technology, Lahore. Notable business schools include the Lahore University of Management Sciences (LUMS), Lahore School of Economics, Forman Christian College, and University of Management and Technology. University of Education, established in 2002, is Pakistan's first specialized university in the field of education.

Lahore also provides education in many fields of health sciences. Notable medical colleges offering MBBS degrees include Allama Iqbal Medical College, Fatima Jinnah Medical College, King Edward Medical University, Lahore Medical and Dental College, Services Institute of Medical Sciences, Shaikh Khalifa Bin Zayed Al-Nahyan Medical and Dental College and Shalamar Medical and Dental College. Important postgraduate institutes are Punjab Institute of

Cardiology and University of Health Sciences, Lahore. University of Veterinary and Animal Sciences is the only college in Lahore providing education in the field of veterinary medicine. De 'Montmorency College of Dentistry is an important college of dentistry. There are many institutes offering education in fields of nursing and pharmacy as well.

Notable schools include Aitchison College, St. Anthony's College, Lahore College of Arts and Sciences, Lahore Grammar School and Salamat School System.

Project proponent is committed to provide education to the children of the workers as it is being provided for other unit also.

Culture

Lahore is referred to as the cultural heart of Pakistan as it hosts most of the arts, cuisine, festivals, music, film-making, gardening and intelligentsia of the country. The city has always been a center for publications where 80 percent of Pakistan's books are published, and it remains the foremost center of literary, educational and cultural activity in Pakistan. It is also an important religious center as it is home to hundreds of *temples*, *mosques*, churches and shrines like *Data Durbar Complex*. Near the project area at the distance of about 1 km an important Durbar 'Hussani Astana" is also present which shows the cultural value near the project area.

Project proponent is committed to preserve the culture and norms of the area and will provide employment to local people for the preservation of the culture.



Recreational Resources and Development:

The project area has not any private recreational facilities.

Aesthetic Values*:*

Like the general trend among the citizens of area, most of the people have low awareness about environment. Even then, some people take cleanliness and neatness of the environment lightly. Some people throw municipal solid wastes (MSWs) on the streets. Sense of personal responsibility to keep the environment clean as good citizens is even now lacking among a few people.

Archaeological and Historical Treasures:

Archaeological or historical treasures within the project area are not available.

Suitability of site

The proposed site for the construction of the Project currently comprises of empty, unutilized land plots. The Project site lies within this zone earmarked for industrial activity of IHSAN cotton products. The project does not fall in any environmentally sensitive area.

CHAPTER # 4

CONSIDERATION OF ALTERNATIVES

Site alternatives:

To fulfill the commercial aspects of the project under reference of this EIA Report, it is to be sited at a place where commercial processing activity is either already going on or there are bright prospects of the same. Concurrently, it must also meet the legal requirements of the Punjab Environmental Protection Act, 1997 (Amended 2012). Availability of land at the best convenient place is equally important among other considerations for the site selection. Availability of access roads, communication facilities, electricity, basic infrastructure, sewerage etc. is yet the other necessary requirements.

Obviously, environmentally sound, neat and clean environment are the other considerations for site selection. The project will also facilitate the people of the area with increasing the opportunity of employment, and other related facilities.

Keeping these requirements and their feasibility and other basic infrastructural requirements, the selected site is ideally suited for Proposed Extension of dyeing unit and construction of Effluent Treatment Plant.

Alternative Site: Near Balochni



Alternative Site: Near Chak 60RB Mogi



Alternative site considered for the subject project

Before the consideration of subject project site, project proponent had considered other sites at/ near the Chak 60 and Balochni, but later it was rejected due to some reasons.

Reasons of Rejection
The reasons of rejection of this site are:

- High cost of land
- Nearby human settlements
- Due to the ownership conflict of surrounding land
- No proper communication facility
- Fauna & Floral Species are present at this site in abundance.

Technology Alternatives:

The proposed development will be constructed using modern, locally and internationally accepted technology and materials to achieve public health, safety, security and environmental aesthetic requirements. Equipment that saves energy will be given first priority without compromising on cost or availability factors.
M/s IHSAN Cotton products (PVT) Limited is an Environmental conscious company which intends to use modern and state of art machinery with minimum impacts on Environment.

Environmental alternative

The project is located in the outskirt of Lahore District. The site is located in an Industrial Area. Various industries have already been constructed on the industrial estate that are complying with the PEQS standards by installing various pollution controls devices Construction of this project in this area will have minimal impact on the daily life people living in Lahore. The project proponent is recommended to make sure the regular maintenance of ETP during the project operations to keep the effluent within the PEQS limits. The Proponent has ensured that regular maintenance will be done to control water pollution impact. Also, the proponent ensured that project vehicles related to dyeing unit operation will be maintained so they don't cause any vehicular emissions.

Economic Alternatives

The project proponent intends to construct wastewater treatment plant and extension of dyeing unit. The installation of this project will lead to the project towards sustainability as the project will not release any untreated wastewater into the drains. This will improve the project brand in the international market and attract international investment. This project will provide

employment during construction phase and managerial staff at operation phase as laborer's workers and managerial staff. This project will accelerate the economic development of the district Lahore and in turn Pakistan.

CHAPTER # 5

SCREENING OF POTENTIAL ENVIRONMENTAL IMPACTS & THEIR MITIGATION MEASURES

The following chapter describes the overall possible impacts of project on the physical, biological and socioeconomic environment because of construction and operation phases and mitigation measures to minimize the significance of the possible impacts up to an acceptable level. The anticipated impacts related to project location, design, constructional and operational phases have been assessed and mitigation measures are provided accordingly.

Identification of all impacts:

All the impacts related to the subject project due to the project location, design, during the construction phase and operational phase have been identified and their mitigation measures have been suggested in *Chapter # 4, Screening of potential environmental impacts and mitigation measures.*

Methodologies for impact identification:

The methodology adopted for impact evaluation includes the Project Impact Evaluation Matrix.

Project Impact Evaluation Matrix

The impact Evaluation matrix was developed by placing project activities on x-axis and different environmental parameters likely to be affected by the proposed project actions grouped into categories i.e. Physical, Biological and Socio Economic Environment. For the impact assessment, project impact assessment matrix is used by dividing the project action into different phases (Construction phase and operation phase). A project impact evaluation matrix is attached in next section of this chapter.

The evaluation of impacts has been carried out on the basis of developing matrix, in which impacts have been rated on the basis of their significance. For rating impacts significance following criterion has been developed;

NA – Not Available
O – Insignificant (No or minimal impact)
LA – Low Adverse (Short term, reversible or less damage to environment)

MA- Medium Adverse (Long term reversible damage to environment)
HA – High Adverse (severe irreversible adverse damage to the environment)
LB – Low Beneficial (Short term benefits or less beneficial to the environment)
MB – Medium Beneficial (Long term benefits to environment)
HB – High Beneficial (Continuous benefits to environment)

	Physical Environment							Biological Environment		Socio-Economic Environment							
Environmental Component / Project Activities	Topography & Drainage	Soil Quality	Landscape	Surface water quality	Ground water quality	Air quality	Noise	Flora	Fauna	Agricultural Land	Health & Safety	Disruption of Public Utilities	Employment	Population Disturbance	Social Disorder	Cultural Values	Traffic Management
Placement of construction machinery on site	LA	LA	MA	LA	O	O	O	MA	LA	MA	LA	O	O	MA	LA	LA	HA
Parking of heavy vehicles	LA	O	LA	O	LA	O	O	LA	O	LA	LA	O	O	MA	MA	MA	HA
Transportation of raw construction material	LA	MA	MA	LA	O	HA	HA	MA	HA	LA	HA	O	MB	HA	HA	LA	HA
Temporary storage of raw material	LA	LA	LA	MA	LA	MA	O	LA	O	LA	LA	O	LB	LA	O	O	HA
Loading and unloading of raw material	LA	LA	MA	MA	O	HA	MA	LA	LA	LA	MA	LA	MB	HA	LA	O	MA
Labour camping on site	O	O	LA	LA	O	O	LA	LA	O	LA	LA	HA	O	HA	MA	MA	O
Storage of oil and fuel	LA	MA	LA	LA	O	LA	O	LA	LA	LA	MA	O	LB	O	O	O	O
Extraction of ground water	O	O	O	O	MA	O	O	MA	O	MA	LA	HA	O	O	LA	O	O
Construction material mixing/ preparation	LA	MA	LA	LA	LA	LA	HA	O	O	O	HA	HA	HB	MA	LA	MA	O

Welding/ cutting and steel fix ring process	O	O	O	O	O	MA	HA	O	O	O	HA	O	HB	MA	LA	LA	O
Shuttering/ beams	O	O	O	O	O	MA	HA	O	O	O	HA	LA	HB	MA	MA	MA	O
Building roofing	O	O	O	O	LA	MA	MA	O	O	O	HA	LA	HB	MA	LA	LA	O
Operation of generators	O	O	O	O	O	HA	HA	O	O	O	HA	LA	HB	LA	LA	O	O
Excavation	HA	MA	MA	LA	LA	HA	HA	MA	LA	O	HA	O	HB	LA	O	O	O
Water tank/ pond on site for temporary storage	O	O	O	LA	LA	O	O	O	B	O	LA	LA	B	LA	O	O	O

Legend:

O=Negligible/No impacts B=Beneficial LA=Low Adverse MA=Medium Adverse HA=High Adverse

	Physical Environment							Biological Environment		Socio-Economic Environment							
Environmental Component / Project Activities	Topography & Drainage	Soil Quality	Landscape	Surface water quality	Ground water quality	Air quality	Noise	Flora	Fauna	Agricultural Land	Health & Safety	Disruption of Public Utilities	Employment	Population Disturbance	Social Disorder	Cultural Values	Traffic Management
Transportation of raw material/ products	MA	MA	MA	MA	O	MA	HA	LA	MA	O	HA	LA	B	MA	LA	O	HA
Production process	O	O	O	HA	MA	MA	MA	O	O	O	HA	HA	HB	O	O	LA	O
Washing process	O	O	O	LA	HA	O	O	LA	LA	LA	LA	HA	B	O	O	O	O
Operation of boilers	O	O	O	LA	HA	MA	MA	O	O	O	HA	HA	HB	O	O	O	O
Operation of generators	O	O	O	O	LA	HA	MA	O	O	O	HA	LA	HB	O	O	O	O
Water consumption	LA	O	LA	HA	HA	O	O	LA	LA	LA	LA	HA	B	LA	O	O	O
Wastewater generation	HA	MA	MA	MA	MA	LA	O	MA	MA	MA	HA	LA	B	LA	LA	O	O
Storage of raw materials/ dyes	O	O	O	O	O	O	O	O	O	O	LA	O	B	O	O	O	O
Social activities	O	O	LB	B	B	B	B	B	B	HB	HB	B	HB	HB	HB	HB	O

Public welfare	O	O	B	B	B	B	B	B	B	HB	HB	HB	HB	HB	HB	HB	LB
Economic activities	LB	O	B	B	B	B	B	B	B	B	HB	B	B	B	B	B	LB
Employment	O	O	O	O	O	O	O	O	O	O	B	B	HB	B	B	B	LB
Infrastructure improvement	LB	MB	HB	B	B	B	B	HB	LB	HB	HB	B	HB	B	B	B	B

Legend:

O=Negligible/No impacts B=Beneficial LA=Low Adverse MA=Medium Adverse HA=High Adverse

Impact analysis and prediction:

In order to evaluate the socioeconomic and environmental impacts, filed 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. For the impact analysis and predictions following methods were adopted:

Consultations/ case studies:

To study the impacts of the project on physical and biological environment, site visits were conducted by the environmental practitioners and experts and possible physical and biological impacts which may arise due to the subject project were identified through consultations and case studies and their mitigation measures were suggested accordingly.

Meetings:

For the identification of the social impacts of the project, meetings and group discussions were held with the local people, stakeholders, nearby residents and passerby because social acceptability of the project and the area is a key to success. Consultation with the stakeholders is a tool for managing two-way communication between the project proponent and the affected public. Its goal is to improve decision making and built understanding by actively involving individuals, groups and organizations, which have stake in the project. This involvement increases project's long term viability and enhances its benefits to locally affected people and other stakeholders.

To identity the different types of stakeholders and as certain their perceptions about the project, an Environmental Impact Assessment study 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.

The EIA team carried out public consultations at various locations around the Project Site. The stakeholder's consultation during this phase of the work targeted the project area, administrative and private offices, Govt. 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.

- Environmental consultants and social specialists and documenting the opinions of the stakeholders expressed during the meetings etc.

Characteristics of impacts:

Impact assessment criteria:

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

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

ANALYSIS OF IMPACTS AND RECOMMENDED MITIGATIONS

Environmental Impacts due to project location

Project is present in the industrial area of the District Lahore. No nearby human settlement exists within the radius of 500 meter. Unit is proposed Extension of dyeing unit and construction of Effluent Treatment Plant; site does not fall in the category of sensitive area and no environmentally sensitive localities exist within radius of study area. The only issue which can arise due to the location of the subject project could be the issue of traffic congestion due to transportation of the construction material at the project site. If the project proponent maintain HSE conditions and comply with the PEQS limits than, there will not be any significant impacts of the project on the environment.

If the mitigation measures are effectively implemented, the residual impact of the Subject project activities on the area's geophysical environment is expected to be insignificant.

Impact significance: Low or may be positive

Nature of impact: Direct

Duration: Long-term

Timing: Operation phase

Reversibility: NA

Likelihood: Low (unlikely),

Consequences: Mild or may be positive

Mitigation Measures for location phase impacts

- Project site should have good road infrastructure and efficient road infrastructure already exists there that is used currently to access the site and there is no issue of the road congestion due to the wide, good and paved road.
- Location can be considered as the positive impact due to utilization of the product in the same District.

Environmental Impacts due to the project design

Subject project is the proposed extension of dyeing unit and construction of Effluent Treatment Plant under the name of M/s IHSAN Cotton products (PVT) limited. Area for parking, solid waste management is already present within the existing facility.

Firefighting plan, health & safety plan, tree plantation plan, emergency response plan has been formulated incorporated during the designing phase of the project. The subject project will consist of;

- Dyeing, hall, canteen, prayer hall, kitchen and dyeing lab
- Finishing hall (Production hall, inspection machines area, Offices area, Finishing quality lab, P.D hall, stitching hall and dispatch area)
- Underground tank
- Work shop
- Store
- Cafeteria etc.

Following are the major Environmental impacts due to the development related to the design:

- Structural stability of the proposed project.
- Soil structure and soil bearing capacity
- Road infrastructure design
- Emergency exit in the proposed project
- Firefighting system
- Wastewater disposal system design
- Rain water harvesting capacity of the drainage system
- Electricity hazards

Impact significance: moderate to high or may be negative

Nature of impact: direct

Duration: Long-term

Timing: Constructional phase & Operation phase

Reversibility: NA

Likelihood: moderate to high

Consequences: moderate to high or may be negative

Mitigation measures and recommendations

Following are the mitigation measures and recommendations to minimize the anticipated impacts:

- Emergency exist points should be marked within the project building.
- Firefighting system should be designed for the emergency situations.
- Geo-technical investigation of the project site should be conducted.
- Electricity system should be designed safe and sound.
- Electricity wires should be covered by thick plastic/electricity resistant covers.

Environmental Impacts during the construction phase

Impacts related to the construction phase of the subject project are discussed below:

Impacts on the Physical Environment

Soil Erosion and Pollution

There is a possibility of soil erosion and pollution to occur during construction phase of the project. The clearing of vegetation could lead into soil erosion when the cleared land is exposed to natural agents such as wind and surface run-off. Removal of top soil after site clearance by agents such as wind, rain water, and surface run off is a likely action to occur. Similarly, accidental oil spills from construction equipment and discharge of wastewater from equipment washing to the environment might accelerate soil pollution to some extent. Oil spills may infiltrate into soil causing soil pollution and later water pollution during rainy season.

However, this impact is localized around machinery, maintenance areas or garage and areas of concentrated activities. Severity of impact is localized with low intensity due to the nature of project, which shall require minimum number of people during construction and shall not require heavy construction equipment. It is expected that the impacts will be low, local, and they will occur mostly during the construction stage (short term).

Land Degradation

Most of the building materials such as stones, aggregates, and sand required for construction of the proposed project will be obtained from nearby quarry sites. Since substantial quantities of these materials will be required for construction of the development, the availability and

sustainability of land resources at the extraction sites will be negatively affected as they are not renewable in the short term.

In addition, the sites from which the materials will be extracted may be significantly affected in several ways including landscape changes, vegetation, poor visual quality and opening of depressions on the surface leading to several human and animal health and safety risks. Similarly, during construction of the proposed project a lot of solid waste will be generated. These include papers used for packing cement, plastics, timber remains, landscape and land clearing debris, asphalt pavement, gravel and aggregate products, concrete, masonry scrap and rubble (brick, concrete masonry, stone) among others. These will have an implication on dump environment. It is expected that the contractor will obtain materials for construction purposes from licensed suppliers or from authorized areas.

Likewise, disposal of construction waste will be on designated sites. The extent of this impact is localized with a low intensity. It is likely that the impact may occur. The impact can be highly improved/eliminated with mitigation. Therefore, the impact is negative and of low significance.

Air Pollution

Air pollution is quite likely to occur during construction phase. This is due traffic and other equipment using fossil fuels that release hydrocarbons and other gases including carbon dioxide, nitrous oxides, sulphur oxides, and particulate matters which may pollute the air. Likewise, activities like land clearing, vehicle movement, excavations for buildings foundations, construction drive ways and landscaping may generate dust especially during the dry season.

Other sources of air pollution will occur due to decomposition and/or burning of the cleared vegetation and dust from gravel drive ways. The level of air pollution originating from the above mentioned sources are expected to be low, localized and short term. No serious impacts are expected on people and the environment as whole.

Surface Water Pollution

Surface water quality may be polluted due to increased erosion, run off from construction site, and contamination in the event of oil spills from equipment and machinery. The extent of this impact will depend directly on the magnitude of other causal factors such as level of clearance.

Impacts on Biological Environment

Impacts on Flora

The clearance of most vegetation during construction to leave space for construction of proposed unit and other building facilities and access roads will bring negative impacts to flora population. Moreover, direct exposure to nitrous oxides (NOx) may cause growth inhibitions

in plants to some extent. No special plant species of international conservation importance was recorded at proposed site. The impacts are therefore considered of low significance.

Impacts on Fauna

The nature of the site has not attracted several organisms to find refuge in the area although some including different types of birds, reptiles, amphibians and invertebrates are found. The clearance of vegetation and presence of noisy machinery, trucks and workforce will create unfavorable environment for most of these organisms while crawling organisms will eventually vanish following construction of paved surface.

However, the temporary nature of the construction activities will result in impacts of short-term duration and therefore the impact is considered of low significance.

Impacts on Socioeconomic Environment

Workers Accidents and Hazards during Construction

Construction workers are prone to accidents resulting from construction activities. These accidents may have acute or chronic impacts depending on nature, severity and intensity. In this regard, construction and mobilization activities of the proposed unit could result into accidental injuries and hazards, etc. which could negatively impact the workforce.

Because of the intensive engineering and construction activities including erection and fastening of roofing materials, metal grinding and cutting, concrete work, steel erection and welding among others, construction workers will be exposed to risks of accidents and injuries. At times, such injuries may be from accidental falls from high elevations, injuries from hand tools and construction equipment cuts from sharp edges of metal sheets and collapse of building sections among others.

Vibration and Noise

The level of noise and vibration are likely to increase during the construction phase. The noise will be mainly come from vehicles and equipment operation during construction activities as well as people working on the project construction. This is a short-term impact and it will be felt mostly around construction sites and its peripherals.

There will be no drilling activities or involvement of heavy or high noise machinery. For residential areas located within 20km from the Project site boundary, it is predicted that the construction phase and operation of the proposed project will not pose any significant and the annoyance level is within the “no to little” impact category.

Considering technological advancement in construction industry, it is anticipated that machinery and equipment to be used during construction will be modern, versatile, and quieter than the old ones. It is also likely that they will require fewer numbers of operators reducing

noise from workers. Therefore, the levels of noise and vibrations are anticipated to be within the tolerable limits, short term and localized. In view of the above and the fact that construction will concentrate on non-residential area, no significant impact is anticipated and the impact can be highly mitigated.

Employment Opportunities

On the other hand, the proposed project will have, during construction phase, potential positive impact to the local community through provision of employment. It is expected that maximum people will be employed during construction phase. Employment will be in form of managers, skilled labors as well as unskilled laborers. Therefore, apart from employment benefits accruing to local people other national and international experts are likely to be employed by the project especially at senior positions.

Income Generation among Suppliers

During construction phase, the proposed project plan to source most construction materials from local and/or national sources including cement, iron sheets, steel bars, pipes, etc. from local shops. This demand therefore, will create market for local people and/or elsewhere in the country engaged in supplying construction materials leading to significant positive economic benefits to suppliers on short term basis.

Impacts on Security

The presence of laborers and expensive construction equipment, machinery and materials in the sites could potentially pose a security risk at the project site. Furthermore, offenders may capitalize on increased movement during construction and anonymity created by the construction activities to carry out criminal activities in the site and surrounding areas. This impact is likely probable due to low security measures from the fact the site is slightly far from police station(s) that could otherwise prevent criminal activities around the project site.

Accordingly, the impacts on the area's security are considered to be of medium significance. Therefore, appropriate security measures should be provided at the site through fencing, security checks/screening of workers and their guests and 24 hours security watch by expert security men (normally privately contracted) to prevent such criminal activities from happening at the site.

Mitigation Measures

Protection of Flora

In order to protect plant species from potential negative impacts, the proponent shall ensure that:

- The contractor is responsible for informing all employees about the need to prevent any harmful effects on natural vegetation on or around the construction site as a result of their activities;
- Clearing of natural vegetation is kept to a minimum;
- Unnecessary removal, damage and disturbance of natural vegetation are prohibited;
- Re-vegetation of the proposed project site is undertaken;
- Indigenous trees are planted around project area to enhance natural habitat

Land Degradation and Soil Erosion Control

Potential negative impacts on land and soils shall be mitigated by ensuring that:

- The contractor implements erosion control measures as an on-going exercise;
- During construction, the contractor protects all areas susceptible to erosion by installing necessary temporary and permanent drainage works as soon as possible and by taking any other measures necessary to prevent storm water from concentrating in streams and scouring slopes, banks, etc.;
- Any tunnels or erosion channels developed during the construction or maintenance period shall is backfilled and compacted and the areas restored to a proper condition;
- Areas where construction activities have been completed and where no further disturbance would take place are rehabilitated through re-vegetation.
- Ground clearance is minimized and if possible concentrated only to the specific building foundation areas, and only when it is necessary.
- Prompt reclamation of exposed soils is done
- Construction during long rains period should is done with caution to avoid soil from being washed away
- Topsoil excavated from buildings foundations is stored for re use on other areas like rehabilitations of quarries

Soil and Water Pollution Measures

Measures to mitigate soil and water pollution impacts during construction phase shall ensure that:

- Concrete mixing directly on the ground is prohibited and only be undertaken on impermeable surfaces;
- Concrete batching activities are located in an area of low environmental sensitivity;
- All runoff from batching areas is strictly controlled; cement-contaminated water is collected, stored and disposed of at an approved site.

- Contaminated water storage facilities are not left to overflow and appropriate protection from rain and flooding are implemented;
- Unused cement bags are stored out of the rain where runoff won't affect it;
- Used (empty) cement bags are; collected, stored in weatherproof containers to prevent windblown cement dust and water contamination, not to be used for any other purpose and shall be disposed of on a regular basis via the solid waste management system;
- All excess concrete is removed from site upon completion of concrete works and disposed of whilst preventing washing of the excess concrete into the ground;
- Entrance or accidental spillage, of solid matters, contaminants, debris and other pollutants and wastes into surface and ground water is prevented;
- Awareness of employees to prevent unnecessary oil spills and protection of environment in their daily duties is promoted; and
- All excess aggregate is removed from site and properly disposed.

Waste Management

To ensure that solid waste is properly managed and potential negative impacts are mitigated, the contractor shall ensure that:

- All facilities are maintained in a neat and tidy condition. Measures to reduce the negligent behavior with regard to the disposal of all refuse are taken, bins, containers and refuse collection facilities for later disposal are provided at all places of work;
- Solid waste may be temporarily stored on site in a designated area prior to collection and disposal;
- Waste storage containers are covered, tip-proof, weatherproof and scavenger proof;
- No burning, on-site burying or dumping of waste shall occur;
- Inert construction rubble and waste materials are disposed of by burying in the borrow pits or a designated site;
- All excavated materials, debris from construction works are not to be stockpiled or deposited near or on stream banks or other watercourse perimeter where they can be washed away by high water or storm runoff or can any way enters to water sources itself;
- Metal refuse bins or equivalent plastic refuse bins, all with lids, are provided to all buildings;
- Domestic refuse is collected and removed from all facilities at least twice per week and transported to the approved refuse disposal site in covered containers or trucks;

- Used oil, lubricants, cleaning materials, etc. from the maintenance of vehicles and machinery are collected in holding tanks and sent back to the supplier;
- Runoff from fuel depots / workshops / machinery washing areas and concrete batching areas is collected into a conservancy tank and disposed of designated site

Surface Water Quality

In ensuring that the quality of surface water on site is maintained, several measures will be taken as follows:

- All excavated materials and debris from construction works shall not be stockpiled or deposited near or on dam banks or other watercourse perimeter where they can be washed away by high water or storm runoff or can any way enter the dam itself;
- The nearby pond and spring shall be protected from erosion and direct or indirect spills of pollutants, e.g. sediment, refuse, sewage, cement, oils, fuels, chemicals, wastewater, etc.;
- In the event of a spill, the contractor shall take prompt action to clear polluted areas and prevent spreading of the pollutants.

Air Quality Control

The contractor shall ensure air quality by undertaking the following measures:

- Ensure that the generation of dust is minimized and implement a dust control program to maintain a safe working environment, minimize nuisance for surrounding residential areas/dwellings and protect damage to natural vegetation, crops, etc.;
- Exposed soil and material stockpiles shall be protected against wind erosion and the location of stockpiles shall take into consideration the prevailing wind directions and locations of sensitive receptors;
- To minimize the pollution caused by dust generation during the construction stage, water will be sprinkled on the construction site and on drive ways as frequently as possible;
- To minimize exhaust fumes, machinery and equipment shall not be running when not in use while ensuring that they regularly serviced; and
- Construction vehicles and machinery shall be equipped with pollution-control devices to minimize emissions.

Vibration and Noise Control

Vibration and noise produced by construction work will be manages as follows:

- The contractor shall strive to keep noise generating activities to a minimum;

- The contractor shall restrict all operations that result in undue noise disturbance to local communities and/or dwellings (e.g. drilling etc.) to daylight hours on weekdays;
- The contractor shall inform in advance any local communities and/or residents that could be disturbed by noise generating activities such as drilling or compacting and shall try to keep such activities to a minimum;
- The contractor shall be responsible for compliance with the relevant legislation with respect to noise;
- Provision of earplugs and earmuffs to the workers working in high peak noises during the construction stage.
- Use of modern low noise machinery and vehicles is recommended.
- Activities that may involve noises and vibration should be withheld at night especially close to human dwellings.

Landscape and Topography

As construction activities are very likely to lead to negative impact on landscape and topography at project site, such impacts will be brought to a minimum by executing the following measures:

- Planting of appropriate indigenous trees, grass cover and other vegetation types on project area should be encouraged so as to enhance scenic beauty of the area; and
- Removal and proper disposal of construction debris need to be effected after completion of construction works and shall not be stockpiled or deposited near or on water sources or other watercourse perimeter where they can be easily be washed away by high water or storm runoff or can any way enter these sources.

Occupation Health and Safety Measures

The following safety measure should be observed during the construction stage:

- Provision of health and safety induction course to all workers;
- Instilling proper code of conduct and work ethics among construction workers and ensure that they are observed;
- Provision of Personal Protective Equipment (PPE) to all workers and enforce their use;
- Installing first aid kit and hire trained personnel to provide first aid;
- Reporting to OSHA within 24 hours of occurrence of any accident or near miss which can cause fatal or permanent disability; and
- Workers should be educated on their own safety and safety of others;

Environmental Impacts during Operation Stage

Main environmental issues associated with Project operation are as follows.

- Health and safety issues for workers may arise during the project process e.g. Particulate matter may be generated during the project process, which may cause the health issues for the workers and noise of machinery can also be a negative impact on the health of workers.
- Waste water due to domestic and process activities.
- Fire due to short circuits and other activities.
- Solid waste generation due to domestic and project related activities.
- Noise pollution from generator and other machinery.
- Health hazards including the electricity hazards.
- Emissions will be generated from working of boiler.
- Ash from the boiler.
- Sludge from wastewater treatment facility will be generated.
- Vehicle access is required especially for transportation. The site is well served with the road network. Heavy traffic will be allowed only during tight time during operational phase. The traffic issues at any stage of project life cycle will not arise.

Impact significance: moderate to high or may be negative

Nature of impact: direct

Duration: Long-term

Timing: operational phase

Reversibility: NA

Likelihood: moderate to high

Consequences: moderate to high or may be negative

Recommendations

- Safety of workers should be ensured through proper training and PPEs must be ensured during the working hours.
- A well design firefighting system will be constructed to cope with fire situations in the subject project.
- Solid waste bins should be installed at designated processes and Installed Solid waste bins should be regularly cleaned and solid waste must be handed over to the third party
- Electricity monitoring/Thermography should be conducted by the proponent quarterly for the safe supply.

- Noise levels should not exceed the PEQS.
- Project proponent should submit all the monitoring reports in the EPA Punjab for the compliance of the PEQS.

Potential Environmental Enhancement Measures

The proposed project will be installed with all precautionary measures to enhance and safe the environment. Following necessary measures will be adopted during construction and operation:

- Sprinkling of water will be done on dusty roads and tracks.
- PPEs will be provided during construction activity.
- Constructional waste and domestic solid waste will be disposed-off or utilized properly.
- Local people will be informed in advance when work is about to start in an area.
- Machinery will never be left unattended.
- Efforts should also be made to discuss traffic conditions so that regular traffic is not disturbed. Transporters engaged for the project would be forced to adhere to the load specifications of the access road. No overloading would be allowed in any case.
- Safety signs and boards will be placed during construction.
- Machinery will be kept maintained.
- Proper SOPs will be followed with proper schedule along with the HSE conditions.
- Area will be restored with native plants. A proper tree plantation plan will be formulated to save the environment.
- Solid waste will be handed over to contractors and agreement will be made.
- Noise will be controlled by adopting proper measures.
- PPEs will be provided to workers during working.
- Firefighting equipment's and system will be installed.
- Safety signs will be placed at all locations where required.
- Hygienic conditions will be ensured and proper quality will be maintained by quality control testing.

Purpose of Mitigation measures

What is the problem i.e. in terms of "major environmental impacts" which may arise by the subject project activity?

The major impacts may arise by the subject project include particulate matter & dust, noise, solid waste and wastewater. Other impacts are of minor importance. These impacts will arise

during construction and operation but precautionary measures will be adopted prior to start the activity, during the activity and post activity.

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

Any impact that would arise due to the subject project activity will be addressed on site. Trainings will be conducted on site prior to start work while other precautionary measures will also be adopted to make the project safe and environmental friendly.

Where and how the problem should be addressed?

HSE manager/environmental manager along with site manager will be appointed to assess any impact that could be arisen during both phases. He would be responsible to address the problem and to mitigate it.

Whys of achieving mitigation measures

Changing in planning and design:

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 in previous chapters.

Improved monitoring and management practices:

Management of M/s IHSAN Cotton products (PVT) limited shall take appropriate measures to provide pollution free and safe environment during the proposed project activity by implementing improved management practices and monitoring techniques suggested in EMP.

Compensation in money terms:

M/s IHSAN Cotton products (PVT) limited will adopt such plan that will assure the minimum impact on the environment and health by implementing proper mitigation measures. Design of the project will assure the structure stability and project life in a long run.

Replacement, relocation and rehabilitation:

- M/s IHSAN Cotton products (PVT) limited will develop Restoration/ reclamation or tree planation plan to restore the project area. Maximum Plantation will be done with native species within the building, along the boundary wall and along the road side if directed by EPA. Also, in-front of main area, horticulture plan will be formulated and area for this will be kept reserved.

CHAPTER # 6

ENVIRONMENTAL MANAGEMENT AND MONITORING PROGRAM

Purpose and Objectives of the EMP:

The primary objectives of the EMP are to:

- Facilitate the implementation of the mitigation measures identified in the EIA.
- Define the responsibilities of the project proponent.
- Define a monitoring mechanism and identify monitoring parameters in order to:

1. Ensure the complete implementation of all mitigation measures.
2. Ensure the effectiveness of the mitigation measures.
3. Provide a mechanism for taking timely action in the face of unanticipated environmental situations.
4. Identify training requirements at various levels.

Management Approach:

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

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

Institutional Capacity

Following functionaries will be involved in the implementation of EMP:

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

Training Schedules

Training for the management/contractors/engineers and workers on environmental aspects of the project will be arranged on biannually basis during the constructional phase of the project

and on quarterly basis during the operational phase of the project. It will be imparted by a team of experienced trainers.

Training of building contractor

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

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

1. Handling of Machineries in a safe way
2. Use of PPEs
3. Maintenance of vehicles and submission of Environmental Monitoring Reports
4. Maintenance of Water Consumption records
5. Testing of water and waste water and submission of Environmental Monitoring Reports
6. Placement of safety signs/boards during construction
7. Sprinkling of water on the roads and dusty tracks
8. Monitoring of generator emissions

Training regarding all other aspects of HSE will be ensured by the contractor during the construction phase.

Responsibility of EMP

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

Summary of impacts and their mitigation measures

Impacts	Mitigation Measures
Project Location	
• Acquisition of land • Loss of environmentally sensitive areas • Changes in traffic pattern • Potential conflicts with stakeholders • Resettlement issues	✓ There is not any sensitive area near the project site. ✓ Many other industries are also working near the project site. ✓ The project proponent will achieve the PEQS at the boundary walls of the subject project to avoid the environmental impacts on the nearby industrial unit. ✓ There is no need to change the traffic pattern due the development of the subject project because few industries have been developed at the same road. ✓ It is recommended to settle the issues through scoping and specific group discussions. ✓ No resettlement issues. ✓ It is recommended for obtaining of approval from other relevant departments.
Project Design	
• Soil structure and soil bearing capacity • Road infrastructure design • Emergency exits • Firefighting system • Wastewater disposal system design • Electricity hazards	✓ Safe road infrastructure design should be provided at the project site. ✓ Emergency exit points should be marked at the project site. ✓ Firefighting equipment must be maintained at the site in good working condition to cope with any emergency situation. ✓ Efficient wastewater disposal system should be designed for proper treatment of wastewater. ✓ Electricity system should be designed safe and sound.
Construction and Operation phase	
Land & Soil	
• Land or Soil Erosion during the construction phase • Habitat destruction • Scarring of the landscape and aesthetic beauty. • Clearing of native plants will disturb the	✓ Sprinkling of water is recommended ✓ After construction phase, the project proponent will restore the land by plantation. ✓ All spoils will be disposed of as desired and the site will be restored back to its original conditions ✓ Aesthetics of the area will be maintained. ✓ Oils, lubricants, chemicals, and other listed hazardous materials should be stored safely at their designated spots,

complexity of the ecosystem of the proposed area. • Leakage of oil from storage area may contaminate soil	enclosures or store rooms, which should be safe from rainfall and away from any potential source of fire (if any)
Air pollution and Dust emission	
• The transportation of the project machineries and material also may cause dust. • Un-metaled roads may cause dust. • Dust raised on dirt tracks by project-related vehicles. • Dust from drilling of deep holes. • Combustion products from vehicles used for project-related activities	✓ Air emissions-controlled devices must be installed to control the air pollution (if Required) ✓ Water the construction site periodically to minimize fugitive dust generation while laying foundation. ✓ Store all construction materials in a manner to minimize generation of dust and spillage on roads. ✓ During excavation works drop heights will be minimized to control the fall of materials reducing dust escape. ✓ Sprinkling of water must be done to control the dust or PM ✓ Vehicle emissions inspection should be done on regular basis ✓ Sprinkling should be done on the unpaved area to avoid dust pollution/ particulate matter. ✓ Vehicles/ trucks should be serviced regularly ✓ All project vehicles will be checked regularly to ensure that engines are in sound working condition and are not emitting smoke.
Noise	
• The major sources of the noise at proposed project site are project related machinery. • High noise level cause hearing loss, deafness, high blood pressure, headache, depression and mental disturbance. • Noise level will not exceed 75 dB(A) at the distance of 2 km radius, activity site is located at a safe distance from the nearest human settlement .	✓ Personal Protective Equipment PPEs including Ear muffs, Ear plugs and other noise abating equipment will be provided to the workers and other staff of the subject project. ✓ Proper maintenance and tuning of the vehicles should be done. ✓ Sound proof room should be built for generator (if any) to control the noise. ✓ A speed restriction of 40 km/h will be imposed on all construction vehicles.

• Noise from construction activities from site preparation, earth works, foundation and plant equipment installation	
Waste Water	
• Domestic waste water from the camp • Minor generation of waste water from construction activity. • Water Contamination due to improper storage of construction material, • Water contamination due to improper debris disposal, • Spread of diseases, underground water contamination	✓ Domestic waste water will be drained out in nearby local drain after treated in septic tanks ✓ Oils, lubricants, chemicals, and other listed hazardous materials should be stored safely at their designated spots, enclosures or store rooms, which should be safe from rainfall.
Solid waste	
• Solid waste may generate from construction activity, domestic and packing material of project related machineries. • Solid waste may generate from operation of project.	✓ A solid waste management division should be formulated to deal with the proper disposal of solid waste, supervised by HSE Manager, SW Manager, and other related personnel. ✓ Solid waste generated from the construction activity as sand, stones residues etc. that should be utilized in restoration of the quarry area whereas solid waste from the domestic sources should be disposed off properly. ✓ Proper solid waste management system is recommended for each individual industrial unit. ✓ Industrial ecology practices will be adopted wherever possible. ✓ 7 R's of sustainability is recommended ✓ Sludge will be removed and dispose off in scientific way. ✓ Solid waste related to the operation will also manage in scientific way.
Health and Safety	

• Health and safety issues will be arose during construction activity, handling of material, machinery and improper practices of work • Health and safety issue may arise during regular operations	✓ Use of PPEs should be implemented at workplace. ✓ First aid measures/medical facility should be provided to project related employees. ✓ Safe drinking water must be provided to workers, staff, and poor people of the area. ✓ Water consumption records should be maintained. ✓ Safety signs & boards should be placed at during construction activity. ✓ Construction site should be fenced properly to avoid any damage to nearby settlements. ✓ Smoking or any drugs should be prohibited during working hours or performing work. ✓ At the time of earthwork, fencing will be ensured for the area under the exploration.

ENVIRONMENTAL MANAGEMENT PLAN OF M/S IHSAN COTTON PRODUCTS (PVT) LIMITED

Serial No.	Environmental Parameter/ Element	Mitigation measure/Enhancement Measures to be taken during:		
		Construction	**Regular operations**	**Responsibilities**
	Gaseous/ Dust emissions	**1-** Control speed of construction vehicles **2-** To minimize dust generation water should be sprinkled on the construction site and on drive ways as frequently as possible. **3-** Regular maintenance of equipment. **4-** People who are working and exposed to severe dust and exhaust fumes should be provided with PPEs. **5-** The use of low sulphur fuels in construction equipment and ensuring proper vehicle and equipment maintenance. **6-** Construction vehicles and machinery shall be equipped with standard	1- Management of M/s IHSAN Cotton products (PVT) limited will ensure that PPEs i.e. masks will be provided to workers during the working hours. 2- Vehicles to be used for the transportation of raw materials at the project site should be properly tuned. 3- Generator shall cater for emergency situation only. Their exhaust will be emitted through an adequately fabricated stack. It will also be ensured that the generators will only function during emergency condition for limited period.	**HSE/Environment Manager**

		pollution-control devices to minimize emissions. **7-** Civil debris, if generated during construction phase, shall be disposed in low-lying areas for land filling. **8-** Construction materials i.e. sand, clay should be transported to the project site in covered trucks. **9-** All project vehicles should be checked regularly to ensure that engines are in sound working condition and are not emitting smoke. **10-** Construction materials i.e. sand, clay and like shall be transported to the project site during night time and will be stored away from the road or foot path. They will be kept under cover to avoid any fugitive dust.	4- Monitoring should be conducted on as per EPA PEQS Rules.	

		11- The site proposed for the construction of M/s IHSAN Cotton products (PVT) limited is located away from human settlements. **12-** All equipment, generators, and vehicles used during the project construction will be properly tuned and maintained in good working condition in order to minimize exhaust emissions.		
	Noise	1. Ensure Noise level compliance according to Rules and Regulation 2. Ensure all construction machinery are maintained and serviced in accordance with the contractor's specifications 3. Ensure exhaust mufflers and engine enclosures are in place and in good working order for all construction equipment and industrial trucks.	1- All activities will be under PEQS level of noise during operation phase. 2- PPEs i.e. ear muffs should be provided to workers in case of high noise. 3- Ensure all production machinery are maintained and	**HSE/Environment Manager**

		4. Ensure Noise generation activities to be relegated during daytime. 5. Ensure that vehicles undergo routine maintenance 6. Notifying the neighbor in case there would be some noisy events. 7. Ear plugs will be provided & implemented in case of heavy noise.	serviced in accordance with its specifications.	
	Health & safety	1- Workers/people will be informed in advance when work is about to start at the project site. 2- Machinery will never be left unattended. 3- Safe driving practices will be adopted, particularly while passing through human settlements. 4- Basic health facilities will be provided to workers.	1. The EMP guidelines will be followed strictly (committed by the management of M/s IHSAN Cotton products (PVT) limited Training of workers will be conducted regarding health and safety. 2. PPEs will be provided and implemented. 3. First aid measures will be provided to workers.	**HSE/Environment Manager**

		5- Construction worker safety shall be in accordance with site specific health and safety plan that identifies site specific risks, safety equipment, action plans, and hospital locations. 6- Daily site inspections should be done to ensure safe work practices. 7- All workmen should be provided with personal protective equipment.	4. Shift Rotation, proper ventilation will be provided to workers in case of thermal stress. 5. Safety signs, safety boards, exit arrows etc. will be placed on site. 6. An Assembling point will be kept to gather in case of emergency situation such as fire hazards. 7. Floors will be kept clean without slippery to avoid any hazard. 8. Firefighting system will be installed to avoid any health hazards. 9. Electrical wires, D.Bs will be kept covered to avoid electrical hazards. 10. Machinery will never be left in running condition.	
	Soil and water pollution	Prevention of accidental oil or chemical spillage, solid matters, contaminants, debris and	1- Water pollution will not be created by this proposed unit.	**HSE/Environment Manager**

		other pollutants and wastes from entering into surface and ground water. Awareness on environmental protection. Avoid deposition of stockpiling materials near or on stream banks or other watercourse perimeter. No grey water runoff or uncontrolled discharges from the site/working areas (including wash down areas) without treatment shall be permitted. Water containing pollutants such as cement, concrete, lime, chemicals and fuels shall be discharged into a conservancy tanks for removal from site. Contractor must dispose solid wastes away from the site to an approved disposal site. Potential pollutants (If any) of any kind and in any form shall be kept Stored and used in such a manner that any escape can be contained and the water table not endangered.	2- Spills during construction or operations shall be absorbed with absorbent blankets, socks, or absorbent material and disposed of in accordance with applicable laws and regulations.	

		Equipment Storage or wash areas shall be placed and constructed in such a manner so as to ensure that the surrounding areas (including groundwater) are not polluted. During construction, standard engineering practices such as silt fencing, erosion control material, and construction tracking pads should be implemented to control runoff, erosion, and sedimentation that could affect watersheds. Proper handling and storage procedures for hazardous wastes e.g. fuel oil should be stored in areas with hard standing and containment to handle spills. Minimize waste production by utilizing best available techniques for site preparation.		
5.	Generation of domestic & project process related solid waste	1. Waste management on site shall be strictly controlled and monitored. Only approved waste disposal methods shall be allowed.	1. Domestic, process related solid waste and sludge will be stored in solid waste bins and will be handed over to certified contractors.	**HSE/Environment Manager**

		2. Ensure that all site personnel are instructed in the proper disposal of all waste. 3. Ensure that all facilities are maintained in a neat and tidy condition Measures shall be taken to reduce the potential for waste and negligent behavior with regard to the disposal of all refuse. 4. At all places of work provide bins, containers and refuse collection facilities for later disposal. 5. Solid waste may be temporarily stored on site in a designated area prior to collection and disposal. Waste storage containers shall be covered, tip-proof, weatherproof and scavenger proof. 6. No burning, on-site burying or dumping of waste shall occur. 7. All solid waste shall be disposed of offsite at an approved landfill site.		

		8. The HSE Officer shall provide metal refuse bins or equivalent plastic refuse bins, all with lids, for domestic waste. Refuse shall be collected and removed from all facilities at least twice per week. 9. Construction waste will be utilized for landscaping, road repairing and maintenance purposes.		
6.	Waste effluents	1- The waste water to be generated from domestic/constructional sources should be treated in site camp septic tank and then it should be disposed off.	1. The sewage to be generated shall be treated in the wastewater treatment facility and then will be drained out in the nearby drain or used for irrigation purposes.	**HSE/Environment Manager**
7.	Water supply	1- It shall be ensured that no activity tempers with the water supply system and water availability	1. It shall be ensured that no activity tempers with the water supply system and water availability	**HSE/Environment Manager**

8.	Soil erosion/Land Degradation	1. The project site has few and scattered amount of vegetation which will not be removed. 2. The land is almost clear and free of dense vegetation. 3. Every care shall be taken to check soil erosion 4. Landscaping 5. Ensure management of excavation activities 6. Provide soil erosion control and conservation structures where necessary 7. In areas where construction activities have been completed and where no further disturbance would take place, rehabilitation and re-vegetation should commence as soon as possible. 8. Ground clearance should be minimized and if possible concentrated only to the specific building foundation areas, and only when it is necessary.	1. Plants will be planted during operation phase of the subject industry.	**HSE/Environment Manager**

		9. Prompt reclamation of exposed soils should be done. 10. Construction during long rains period should be done with caution to avoid soil from being washed away. 11. Topsoil excavated from buildings foundations should be stored for re use on other areas for rehabilitation		
9.	Enhancement of aesthetic beauty of the building and the area.	------	1- Flower pots containing flowers and plants will be provided in front of the building to add to the improvement of the environment around. 2- All other necessary measures will be taken to maintain standards of cleanliness so that the building may add to the scenic/aesthetic beauty of the area around.	**HSE/Environment Manager**

10.	Staff for catering the Environmental Management Plan	---	1- Special staff will be recruited to implement this Environmental Management Plan on regular basis.	**HSE/Environment Manager**

Equipment Maintenance Detail

The subject project is the proposed extension of dyeing unit and construction of Effluent Treatment Plant under the name of M/s IHSAN Cotton products (PVT) limited. The company will maintain the records for Health Safety & Environment and will hire HSE manager to check and deal with the HSE issues. The company shall maintain PPEs, medical facilities, firefighting Equipment's as fire buckets, fire hydrants and fire extinguishers and records for their periodic fillings or replacement.

Type of Equipment	Type of Inspection	Schedule
Cranes – Crawler, Truck, Hydraulic, etc.	Complete inspection and certification	Before put to work and annually
	Critical items, controls, overall functioning	Daily
	Safety device, hooks, cables, electrical	Monthly
	Complete inspection	Every 3 months
	Repair	When failure occurs
	Preventative maintenance	Manufacturer's recommendation
Heavy Equipment	Complete inspection	Before put to work
Dozers, Backhoes	Complete inspection	Every 3 months
Compactors, Trucks	Repair	When failure occurs
	Preventative maintenance	Manufacturer's recommendation
	Operator's checklist	Daily
Miscellaneous	Complete inspection	Before put to work
Compressors, Welding Machines, Generators	Complete inspection	Every 3 months
	Repair	When failure occurs
	Preventative maintenance	Manufacturer's recommendation

ENVIRONMENTAL BUDGET

The cost which is required to effectively implement the mitigation measures is important for the sustainability of the Project in operation stage of the Project. Management will allocate 2% of total cost of the project as Environmental Budget for meeting the following purposes:

Table: Allocation of Environmental Budget

HSE training	On quarterly basis
Maintenance and management of environment	On regular basis
Maintenance of equipment	On regular basis
Restoration	As per requirement
Plantation	During the operation phase
Availability of PPEs	During construction and operation
Strategic planning to cope with any emergency	As per policy
Formulate the disaster management plan to cope with natural disaster	As per policy

Implementation of all these parameters will be included in the environmental budget. Any equipment failure will not be included in this budget.

CHAPTER # 7

STAKEHOLDERS PARTICIPATION

Social acceptability of the project and the area is a key to success. Consultation with the stakeholders is a tool for managing two-way communication between the project proponent and the affected public. Its goal is to improve decision making and built understanding by actively involving individuals, groups and organizations, which have 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, filed 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 identity the different types of stakeholders and ascertain their perceptions about the project, an initial environmental examination 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.

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 project. Public involvement is a compulsory feature of environmental assessment, which leads to better and more acceptable decision making. The objective of the consultation with stakeholders is to help verify the environmental and social issues that have been presumed to arise and to identify those which are not known or are unique to the construction of the proposed unit.

The important general objectives of the consultation process are:

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

Methodology of consultation:

The EIA team carried out public consultations at various locations around the Project Site. The stakeholder's consultation during this phase of the work targeted the project area, administrative and private offices, Govt. 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 industry workers, villagers, shopkeepers, drivers etc.
- Environmental consultants and social specialists and documenting the opinions of the stakeholders expressed during the meetings etc.

Proponent

Possible impacts and mitigation measures related to the subject project were discussed with the project proponent and management. They assured to take all suggested mitigation measures to control any discrepancy arose by the project and to make the project environmental friendly.

Responsible Authority

Management of M/s IHSAN Cotton products (PVT) limited is the responsible authority to take all measures prior to start the activity.

Environmental Practitioners and experts

Team of M/s Pak Green Enviro-Engineering PVT. Ltd visited the project site, had discussions with stakeholders and consulted with the local people of nearby and other villages to evaluate the project socio-economic impacts. People provide the massive information about the project and have positive remarks regarding the project development.

Other departments and agencies

For the impact analysis detailed meetings were held with the management of M/s IHSAN Cotton products (PVT) limited local community, education institutes, health institutes, hospital and NGOs. 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.

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

Affected & Wider Community

There is no affected community present in the radius of our study area. PGEE team has consulted with the inhabitants of the different villages. They provided positive remarks regarding the subject project and in the favor of the subject activity for the proposed plant. Stakeholders participation Performa's and socioeconomic questionnaire were get filled by the inhabitants to evaluate the project socio-economic impacts. List of respondents and socioeconomic questionnaires are attached as ***Annexure-J*** with the report.

In addition to the above categories, authorities of administrative and educational institutions, commerce and Investment Department (C&I), Environmental Protection Department (EPD) etc. were also consulted for more effective participation and appraisal of the proposed project.

Issues Discussed:

Following issues were discussed during the stakeholder consultation:

- Overall activities of the project;
- Possible impacts on natural vegetation, air, land and properties;
- Possible mitigation measures;

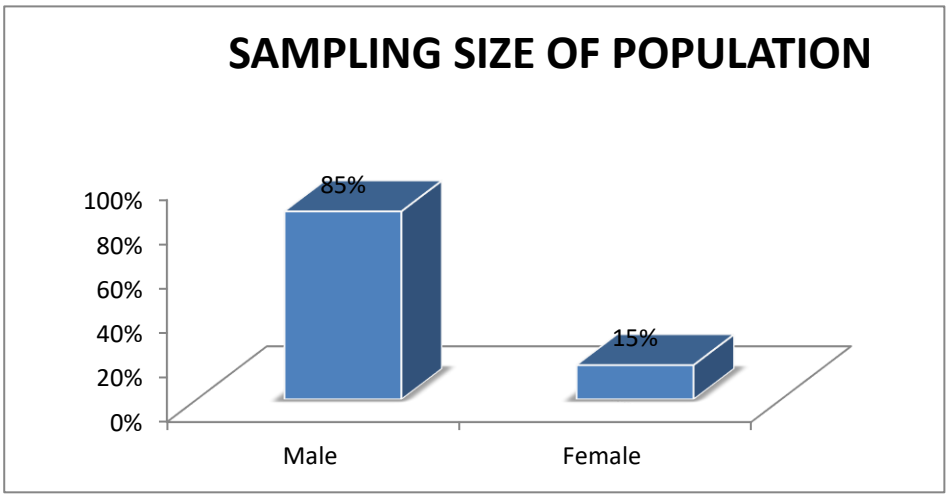
Sample size

Sample size of 20 respondents was selected by the Team of consultants for conducting the socioeconomic survey. Women were also consulted for the said survey; some of their names are mentioned in the above list of respondents while most of them were not willing to give personal information.

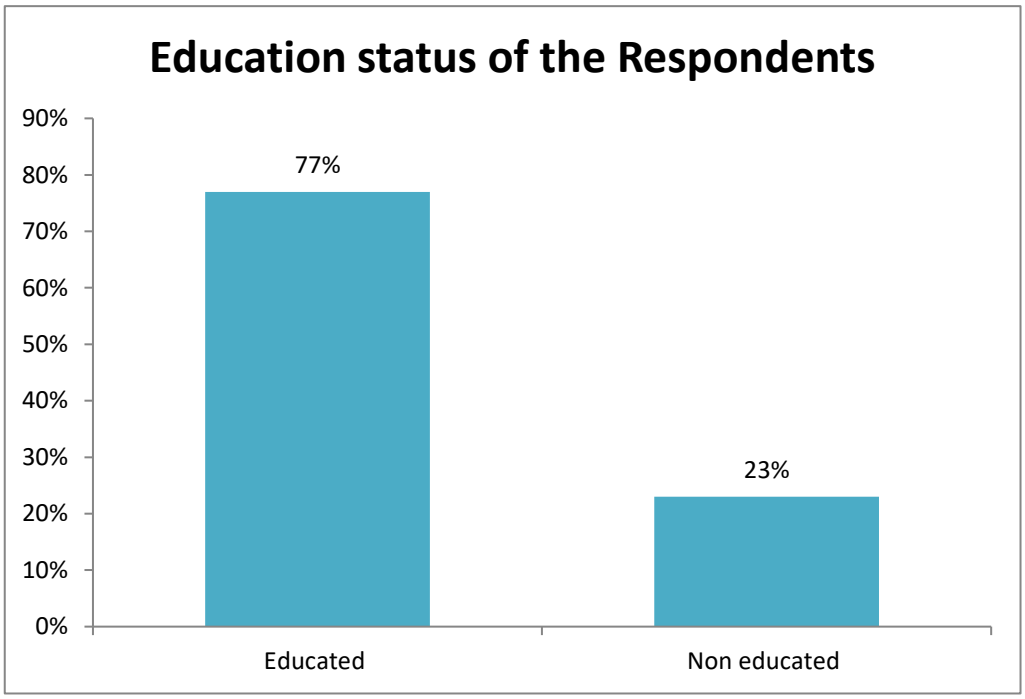
Statistical Analysis

SPSS 19.0 has been used for the statistical analysis of the data collected during the visit of study site area through questionnaires.

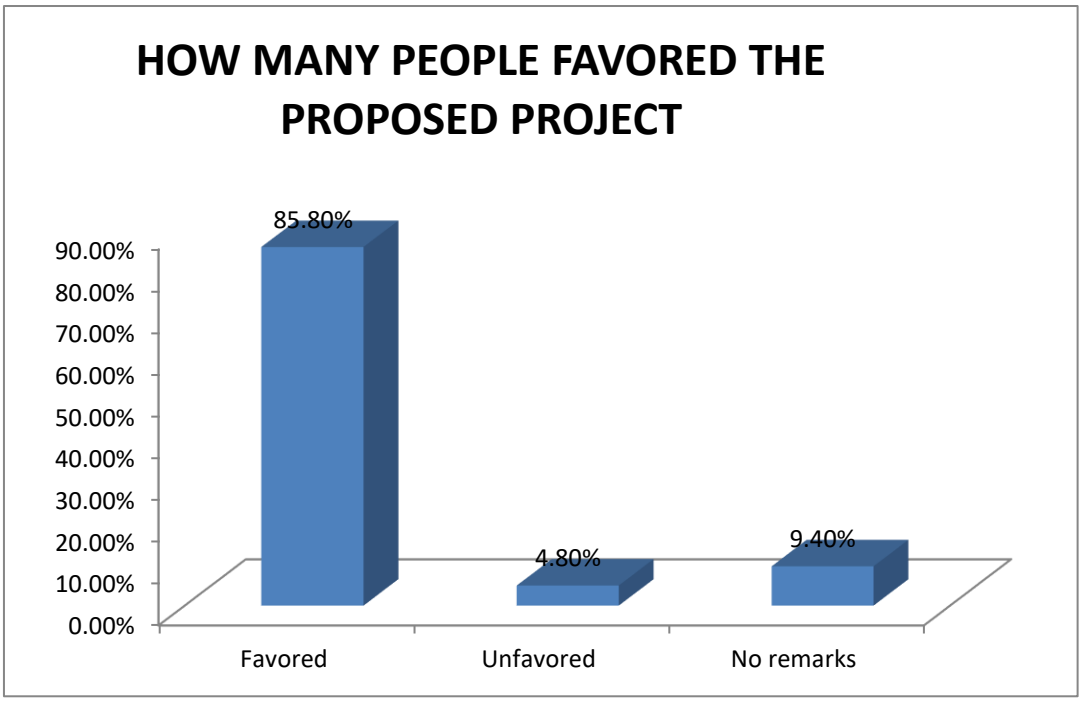
Graphical representation of analysis is given below:



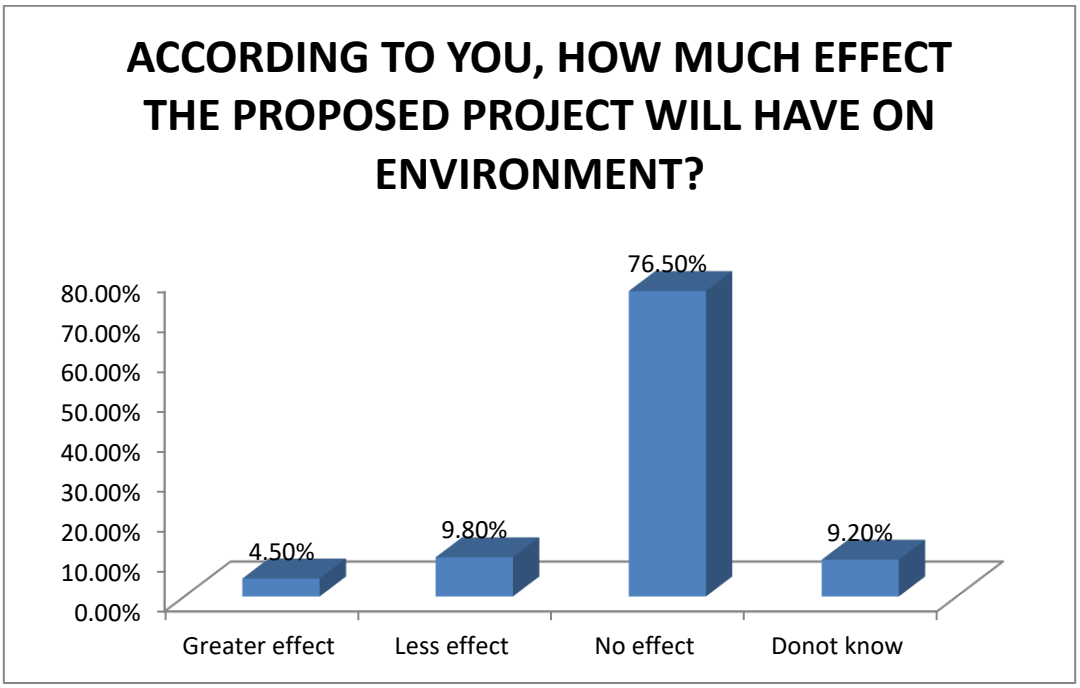
In the sampled population, 85% respondents were male while 15% respondents were female. The number of female respondents is less as compared to male respondents because according to the social binding female hesitates to respond or communicate comfortably.



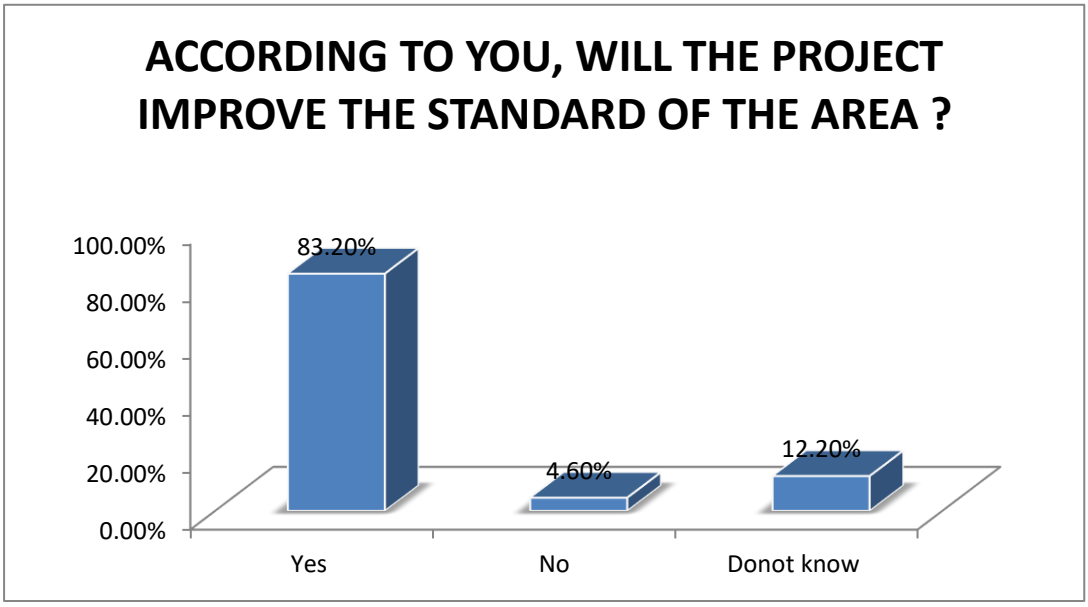
In the sampled population, 77% respondents were educated while 23% were uneducated. Overall education status of the area is good.



As per survey, 85.80 % people favored the project and they gave positive remarks regarding the subject project. While 9.40% respondents had no opinion regarding the project and 4.80% respondents were not satisfied with the project because they think that development will affect the natural aesthetics of the area.



As per survey, 4.50% respondents said that subject project will affect the environment of the area, 9.8% said that there will be less effect on the environment, 76.50% respondents said that the project will not affect the environment and 9.20% said that they have no idea regarding the subject project. Most of the population was not aware about the environmental importance; they were giving their remarks according to their own knowledge.



As per survey, 83.2 % people said that the project will improve the standard of the area, 4.60% said that it will have no impact on the area while 12.20 % respondents gave no remarks.

Findings of the Overall Discussion:

- After the completion of the proposed project the site will be used for industrial activities.
- It will enhance the socio-economic conditions/values of the area.
- Project will increase revenue generation for the Government.
- It will create employment opportunities.
- Local people will be given preference for employment in the proposed project.
- Construction of the proposed project will be completed in the designated timeframe to limit adverse impacts of construction.
- There will be no significant additional load on the existing infrastructure i.e. utilities of water, telephone, electricity etc. due to the development of the proposed project.

Majority of people favored the proposed project in a sense that the construction of the said project will generate employment opportunities for local people and revenue for the government, will enhance the socioeconomic conditions of the area and automatically will contribute to the national economy of the country.

Table 0-1: Summary of issues and commitments by Proponent

Issue	Aspect/Concern raised by Stakeholders	Project Proponent Commitments
Employment Opportunities	Expectations of employment are very high. Job opportunities are less for herders as they generally have less skills and training.	Employment is the main priority of the industry. Mostly locally skill and unskilled labor will be prioritized and also there will be job in executive level. Around 30-40 person will be employed by the industry.
Training Opportunities	People are keen to consult with subject industry if the Project offers training and upgrading opportunities to enhance their trade or professional skills.	Development of the Training Strategy, including commitment of allocation of budget investment for training infrastructure, delivery and design. Installation of training facilities in for worker of the company and students will also be accommodating.
Health & safety	Truck traffic is a main concern because the road used by the Project passes through a number of small communities and different industries and there will be a high volume of trucks transporting concentrate.	Traffic safety training. Traffic advisory signs will be installed along project site and all nearby specific areas.
Local economy and business development	Local service providers are keen to participate in providing services to provide raw material and expect to receive in order to adjust their businesses to meet specific needs.	Proponent has main focus that they will all the material regarding construction and plant operation to buy from the local market.

	Local businesses want to receive support in terms of finance and facilities to diversify their businesses. Local/regional companies and entrepreneurs have limited understanding about meeting the high volumes required by the Project and the quality standard, but are keen to know these requirements so they can become suppliers.	This will help the local and small business and to people who are keen interested to become suppliers.
Environmental Issues	Dust and noise impacts, particularly from the construction activities and in operation of mechanically unfit machines, are of concern to herders and other residents. Environmental degradation during road construction and use. Loss and change of vegetation due to soil degradation. Increased waste along project boundary and around economic zone.	Implementation of controls under the Environmental Management Plans, including on and off-site dust and noise monitoring. A Participatory Environmental Monitoring Program will be launched to spread awareness.
Water quantity and quality	Waste water will not be the major concern of this project because the said project is the installation of WWTP. Only domestic waste water will be produced from dyeing unit and there will be no process waste water.	Implementation of consultation in relation to water use and development of the Participatory Environmental Monitoring Program.

CHAPTER # 8

CONCLUSION AND RECOMMENDATIONS

Based on the study conducted for Environment Impact Assessment (EIA) for the subject project, the following conclusions are made:

Conclusions

- The EIA study reveals that the project is economically viable, socially acceptable and environment friendly.
- It will generate additional jobs during construction and operation phases.
- The proponent has committed to implement the project in the environment friendly manner.
- M/s IHSAN Cotton products (PVT) limited intends to register the project with local Government.
- M/s IHSAN Cotton products (PVT) limited has prepared and implemented very comprehensive Emergency Preparedness and Response Standard Operating Procedures.

Recommendations

- In view of the comprehensive screening process and findings of the present study there is no need of conducting further investigations.
- Tree plantation inside the unit and near the unit is recommended.
- The untreated wastewater will not be reused for irrigating the vegetation and lawns.
- High standards of bio-security and safety will be enforced during operation stage. Safety of the workers will be top priority for the management.
- The management of M/s IHSAN Cotton products (PVT) limited will continue to assist the local communities as a corporate/social responsibility.
- The present EIA report is enough to meet the administrative and legal framework. Therefore, the environmental approval may be accorded for the present project

Study Team

Sr. No.	Designation	Name/Qualification	Experience
1	Chief Environmentalist/ Lead Environmental Professional	**Abdul Hafeez Nasir** PhD Scholar Environmental Management	Twelve Years' Experience as Environmentalist
2	Senior Environmentalist/ Environmental Professional	**Iftikhar Ahmed** M.Phil. Environmental Sciences	Eight Years' Experience as Environmentalist
3	Sr. Environmental professional	**Iqra Amjad** M.Phil. PU, Lahore	4 Years' Experience as Environmentalist
4	Environmental professional	**Faiza Anjum** M.Phil. PU, Lahore	2 Years' Experience as Environmentalist
5	Environmental Engineer	**Amna Aftab** BSc. UET, Lahore	06 months' Experience as Environmentalist

LIST OF ABBREVIATIONS

PEPA	**Punjab Environmental Protection Act**
PEQS	Punjab Environmental Quality Standards
PEQS	Punjab Environmental Quality Standards
WAPDA	Water And Power Development Authority
EMP	Environmental Management plan
WWTF	Waste Water Treatment Facility
Pak-EPA	Pakistan Environmental Protection Agency
W.H.O	World Health Organization
PET	Punjab Environmental Tribunal
SWM	Solid Waste Management
CSR	Corporate Social Responsibility
MSWs	Municipal Solid Wastes
TMA	Town Municipal Authority
KVA	Kilo Volt Ampere
PPEs	Personal protective equipment's
PM	Particulate matter

LIST OF RESPONDENTS

Sr. No.	Name	Profession	Age	Education
1.	Kamran	Employee	20	Intermediate
2.	Razia	House Wife	35	Bachelors
3.	Mazhar	Worker	49	Matric
4.	Rehmat	Worker	25	Intermediate
5.	Shabana	Housewife	35	Bachelors
6.	Adil	Worker	25	Bachelors
7.	Mekhayal	Employee	36	Bsc
8.	Sajid	Worker	55	Nil
9.	Khurram	Worker	35	Intermediate
10.	Saeed	Employee	27	Mphil
11.	Zulfiqar	worker	26	-
12.	Luqman	Employee	33	Bsc
13.	Mudasir	Engineer	31	Electrical engineering
14.	Adeel	Worker	41	Nil
15.	Zeeshan	Worker	27	Intermediate