Contents

EXECUTIVE SUMMARY **9**
1. INTRODUCTION **15**
1.1 Project Background 15
1.2 Project Nature and Size 15
1.3 Project Location 16
1.4 Regulatory Compliance 16
1.5 The Proponent 17
1.6 Scope of Project 17
1.7 Details of Consultant 18
1.8 1.8 Purpose of Report 19
2. SCREENING AND SCOPING **20**
2.1 Screening/Type and Category of Project 20
2.2 Scoping: 20
2.3 Alternatives 22
Site Alternatives 22
Design/Technology Alternatives: 22
Environmental Alternatives: 22
Economic Alternatives: 22
3. DESCRIPTION OF PROJECT **23**
3.1 Objectives of Project 23
3.2 Location and Layout of Project 23
3.3 Land Use on Site: 23
3.4 Road Access 24
3.5 Vegetative Features 24
3.6 Amenities 24

3.6.1 Electricity 25

3.6.2 Ground Water Resource 25

3.7 Management Plans 25

3.7.1 Air Emissions 25

3.7.2 Wastewater Management and Disposal 27

3.7.3 Waste Management 27

3.8 Staff/Manpower 28

3.9 Emergency Preparedness 28

3.9.1 Safety Trainings 28

3.10 Cost and Magnitude of Operation 29

3.11 Land ownership Documents 29

3.12 Schedule of implementation 30

3.13 Basic Raw Materials Required by the Proposed Unit 30

3.15 Manufacturing Processes Description: 31

3.15.1 Manufacturing process: 31

3.16 Relocation and Rehabilitation Plan 32

4. DESCRIPTION OF THE ENVIRONMENT 33

4.1 PHYSICAL RESOURCES 33

4.1.1 Geography 33

4.1.2 Geology and Soils 34

4.1.3 Climatology 35

4.1.4 Surface Water & Ground Water 37

4.1.5 Seismology 38

4.1.6 Flooding 39

4.1.7 Water Logging and Salinity 39

4.1.8 Air Quality 39

4.1.9 Noise Level Determined 39

4.2 Ecological Resources 40

4.2.1 Marine and Aquatic Ecology 40

4.2.2 Flora 40

4.2.3 Fauna 40

4.2.4 Endangered Species 40

4.3 Economic Development 40

4.3.1 Agriculture, Industries and Tourism 40

4.3.2 Transportation 41

4.3.3 Energy Sources 41

4.4 Quality of Life Values 42

4.4.1 Communities Population and Features 42

4.4.2 Socioeconomic Conditions 42

4.5 Stakeholder Consultation 46

4.5.1 Methods of Public Consultation 46

4.5.2 Project Response 46

4.5.3 Concerns and Solutions 47

5. PUBLIC CONSULTATION AND INFORMATION DISCLOSURE 49

5.1 Proponent's Environment Management Team 49

5.2 The Responsible Authority 51

5.3 Objectives of Consultation 52

5.4 Identification of Stakeholders 52

5.4.1 Direct Stakeholders 52

5.4.2 Indirect Stakeholders 52

5.4.3 Other Departments and Agencies 53

5.5 Public Disclosure 53

5.6 Consultation Process 53

5.7 Environmental Practitioners and Experts 54

5.8 Affected and Wider Community 55

5.8.1 Views, Concerns and Suggestions of Various Stakeholders 55

5.8.2 Addressing Public Concerns 56

5.9 Acceptance Level of the Project 56

6. POTENTIAL ENVIRONMENTAL IMPACTS AND MITIGATION MEASURES 57

6.1 General 57

6.1.1 What is the problem? 57

6.1.2 When problem will occur and when it should be addressed? 57

6.1.3 Where problem should be addressed? 58

6.1.4 How the problem should be addressed? 58

6.2 Ways of Achieving Mitigation Measures? 58

6.2.1 Changing in Planning Design 58

6.2.2 Improved Management and Monitoring Practices 58

6.2.3 Replacement/Relocation/Rehabilitation 58

6.3 Impact Assessment Methodology 59

6.3.1 Screening of Potential Impacts 59

6.3.2 Identification of Mitigation Measures 59

6.4 Impact Evaluation 59

6.4.1 Methodology for Impact Evaluation 59

6.5 Impacts Associated with Project Location 64

6.6 IMPACTS DURING OPERATIONAL STAGE 64

6.8.1 Impacts on Climate 64

6.8.2 Employment Generation 64

6.8.3 Air Quality 64

6.8.5 Water Consumption 65

6.8.6 Wastewater Generation....65

6.8.8 Solid Waste Generation....66

6.8.9 Health and Safety of Workers 66

6.8.10 Emergency Response....67

6.9 POTENTIAL ENVIRONMENTAL ENHANCEMENT MEASURES 68

6.9.1 Tree Plantation 68

6.9.2 Facility Design 68

6.9.3 Social Enhancement Measures 68

7. ENVIRONMENTAL MANAGEMENT AND MONITORING PLANS....70

7.1 Objectives....70

7.2 Management Approach....71

7.2.1 Proponent....71

7.2.2 Contractors....71

7.3 Components of EMMP 71

7.3.1 Remedial and Mitigation Measures 71

7.4 Environmental Management and Monitoring Framework 71

7.4.1 Institutional Arrangements and Responsibilities....84

7.4.2 Proposed Monitoring Program to Assess Performance or Output of EMP 85

7.5 Proposed EMP Reporting and Reviewing Procedures....89

7.5.1 Meetings 89

7.5.2 Changes-Record Register....89

7.6 Impacts and their Mitigation Summary....89

7.7 Equipment Maintenance Details 90

7.8 Environmental Budget.....90

8. CONCLUSION AND RECOMMENDATIONS.....92

8.1 Merits and Demerits 92

8.2 Recommendations.....93

LIST OF TABLES

Table 1: Salient Features of the Project.....9
Table 2: Impact Summary 11
Table 3: Details of Proponent 17
Table 4: Consultant Details.....18
Table 5: List of Experts 18
Table 6: Vegetative Features of the Project Area 24
Table 7: Details of the Officers 28
Table 8: Breakup of Project Cost 29
Table 9: Wind Speed and Direction……36
Table 10: Concerns of Stakeholders……....46
Table 11: List of Environmental Experts Consulted….....53
Table: 12: Impact Screening Checklist……60
Table 13: Impact Evaluation Matrix……....62
Table 14: Environmental Management Plan…….….71
Table 15: Roles and Responsibilities……75
Table 16: Environmental Monitoring and Management Plan……..78
Table 17: Impacts Summary of dyed fabric manufacturing unit processing……86
Table 18: Schedule for Implementation of Environmental Budget……..88

LIST OF FIGURES

Figure 1: Project Site 16
Figure 2: Road Access Map.....24
Figure 3: Design of Dry Scrubber……26
Figure 4 : Design for Septic Tank.....27
Figure 5: Manufacturing process…….31
Figure 6: Agro-Ecological Zones of Pakistan…….36
Figure 7: Seismic Zones of Pakistan……37
Figure 8: Projected Population of Faisalabad……...……41
Figure 9: Literacy Rate of Project Area……42
Figure 10: Income Level……43
Figure 11: Occupation of the locals…….43
Figure 12: Percentage of people in favor or against the project……..46
Figure 13: Impact Assessment Hierarchy……...58

EXECUTIVE SUMMARY

This executive summary represents the finding of Environmental Impact Assessment (EIA) of M/S Chawla Enterprises at Plot no 189/RB Tehsil Chak Jhumra District Faisalabad. The project site/unit is situated at a self-developed land. According to section-12 of PEPA-1997 (Amended, 2012) Environmental Approval/NOC is a mandatory provision.

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

The main objectives of this Environmental Impact Assessment (EIA) Report are to identify the baseline environmental, biophysical and socio-economic conditions, to examine project alternatives including alternate sites, and to study the potential impacts along with formulation of suitable mitigation measures for an environment friendly implementation of the proposed project site and around the project area. The Subject Project is aiming to change nature of business; earlier fabric was manufactured at the location but now M/S Chawla Enterprises now intends to add a dyeing unit within the subject project site. An environmental approval/NOC for already existing warehouse building of Chawla Enterprises is attached with the report. Whereas, the existing unit is exempted by the law of 1997 and the PET order case copy is also attached along with the EIA report, which proves that the complaint against Chawla Enterprises has been dismissed by the EPA department.

Table 1: Salient Features of the Project

	Project Title	M/S Chawla Enterprises
	Project Location	Plot no 189/RB Tehsil Chak Jhumra District Faisalabad.
	Proponent	**Name:** Mohammad Jameel Chawla S/O Mohammad Ibrahim **CINC No:** 33100-6868647-9 **Address:** Canal road, House # 73, Street # 1, Raza Gardens Faisalabad, Tehsil & District Faisalabad.
	Consultant	EnvironTech Consultants (Pvt.) Ltd.
	Total Area	40 Kanal

	Capacity of the project	55 ton
	Location of project	31°31′07.8″N 73°14′45.2″E
	Nature of Area	Self-developed
	Present status of Land Use	Constructed
	Land use in the surroundings of project site. Front Back Left Right	The project is located in Self-developed. The surroundings are: road industry industry open land
	Cost of Project	PKR 83 Million
	Raw material	Fabric
	Product	Dyed Fabric
	Purpose of proposed project	The subject project is of a fabric manufacturing unit, raw material is outsourced and a fabric is made. Now, the unit is adding a dyeing facility to manufacture a dyed fabric.
	Nearby emergency services i.e. Hospital, police station, rescue, fire brigade etc.	Tahir Clinic (4.5 Km) Rescue 1122, (4 Km) Police Station Khurrianwala (3.4 Km)
	Tree Planation	At Designated Green Areas
	Water Source	Ground Water
	Status of Project	Constructed
	Source of Power	WAPDA (FEPCO)

1.0 Project Description

The said project is basically of a fabric manufacturing unit, raw material is outsourced and a fabric is made. Now, the unit is adding a dyeing facility to manufacture a dyed fabric.

The salient features of proposed unit are as under:

- Imported latest art of technology plant/machinery which incorporates the requirements of PEQS rather the plant based on International Standards which are more stringent as compared to standards of Punjab.
- Quality Assurance/Quality Control Department
- Ware House
- Standard Operating Procedure

- Central fire hydrant system, fire alarm systems, Smoke detectors, fire extinguishers are placed.
- Emergency assembling points shall be mentioned in the factory and the workers will be trained to cope with any emergency situation.
- Ornamental plants/trees shall be grown up; grassy lawns will be developed at open place.

2.0 Impacts and Recommended Mitigation Measures

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

Table 2: Impact Summary

Environmental Parameters	Impact Assessment during Different Phases	
	Construction	Operational
A: Physical		
Land Resources		
Soil Erosion and Contamination	-2p	0
Transportation	-1t	-1t
Solid Waste and By-Products	-2t	-2p
Land Use	-2p	NA
Air Resources		

Noise Pollution	-1t	-1t
Air Emission	-1t	-1t
Dust	-1t	-1t
Odor	NA	-2t
Water Resources		
Ground Water	-1p	-1p
Surface Water	NA	NA
Wastewater	-1p	-2p
B: Ecological		
Flora		
Tree Cutting	-1p	+1p
Fauna		
Terrestrial Fauna	-1p	+1p
C: Socio-Economic		
Employment Opportunities	+1t	+1p
Land Value Appreciation	+1t	+2t
D: Hazards		
Biological Hazards	NA	NA
Physical Hazards	-1t	-1p
Chemical Hazards	0	-1p
Health and Safety	-1t	-1p
Legends: 1= Low; 2= Medium; 3= High; 4= Extremely High; NA= Not Applicable; t= Temporary; p= Permanent; app= Applicable; 0= Negligible		

3.0 Environmental and Social Monitoring Plan

Environmental Management and Monitoring Plan (EMMP) were developed for effective implementation of the recommended mitigation measures. The EMMP includes check and balance to control and minimize the identified impacts and monitoring programs to oversee residual impacts, if any, during the operational phase. The EMMP describes procedures to be followed throughout the construction and operation of the project. It also identifies the roles and responsibilities of all concerned personnel, including the persons reporting during the different project phases. Mitigations for physical, biological and socio-economic parameters will be measured to determine compliance with standards established in EMMP. The Monitoring Plan will record the inputs provided by various participants in the environmental and social management process. It will also check whether the prescribed national and provincial guidelines and plans are being followed and that the required mitigation measures and activities are being accomplished in time.

4.0 Monitoring Plans

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

5.0 Conclusion

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

6.0 Recommendations

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

- The adverse environmental impacts can be reduced significantly by adopting best management and monitoring practices as well as by implementation EMMP with true spirit
- Proper PPEs including gloves, face masks, head gear etc. will be provided
- No compromise on public health and environment should be allowed
- Waste minimization practices should be introduced to workers by conducting lectures on spot to aware the workers about the long-term benefits of the same in lieu of surrounding environment

- A proper tree plantation plan should also be developed in order to make the process environment friendly
- Small domestic waste storage bins should be placed at different locations for proper collection and disposal of the solid waste
- It is recommended that the Proponent should obtain an Environmental Approval (NOC) from the Punjab-EPA before proceeding further.

1. INTRODUCTION

1.1 Project Background

The volume of the textile industry in Pakistan is estimated by the fact that it has extensive production and the capability to add value at every stage of processing. The industry takes part in 8.5% of GDP and employs roughly 40% of the workers around the country. The average percentage of textile items in national exports has remained at around 62%, excluding seasonal and cyclical variations. The textile sector contributes around 8.5 percent of the GDP and it also contributes around 60 % of export earnings.

Out of the total labor force of the country, it currently contributes to 40 % of the labor force is employed in this sector. It is equivalent to 19 million workers and among the m The importance of the textile industry in Pakistan's economy is measured by the fact that directly and indirectly 25 million individuals are linked to this sector the livelihood of 25 million individuals is linked with this sector so there's no doubt textile industry is very important in Pakistan for economic growth manufacturing sector, in the value addition chain, it makes up 29 %.

Textile Industry may deal with Fabric they are subject to a variety of laws and regulations that govern the patenting, testing, safety, efficacy and marketing of Fabric products. In this regard, Chawla Enterprises is aiming to change nature of business; earlier fabric was manufactured by using yarn but now M/S Chawla Enterprises intends to add the dyeing unit at the premises and hence, the final product will be a dyed fabric manufacturing by Chawla Enterprises. An environmental approval for stitching unit has already being obtained by the proponent and now proponent is seeking approval for the addition of a dyeing unit. As the unit was already constructed back in 90's and hence, is exempted by the law.

1.2 Project Nature and Size

The proposed project will involve quality dyed fabric manufacturing. Proposed project will be constructed on an area of 40 kanal. Total capacity of the plant will be 55 ton. The products which will being manufactured by the unit is dyed fabric.

1.3 Project Location

The location for the installation of project of Chawla Enterprises at Plot no 189/RB Tehsil Chak Jhumra District Faisalabad. The geographical location of the proposed area is 31°31'07.8"N 73°14'45.2"E

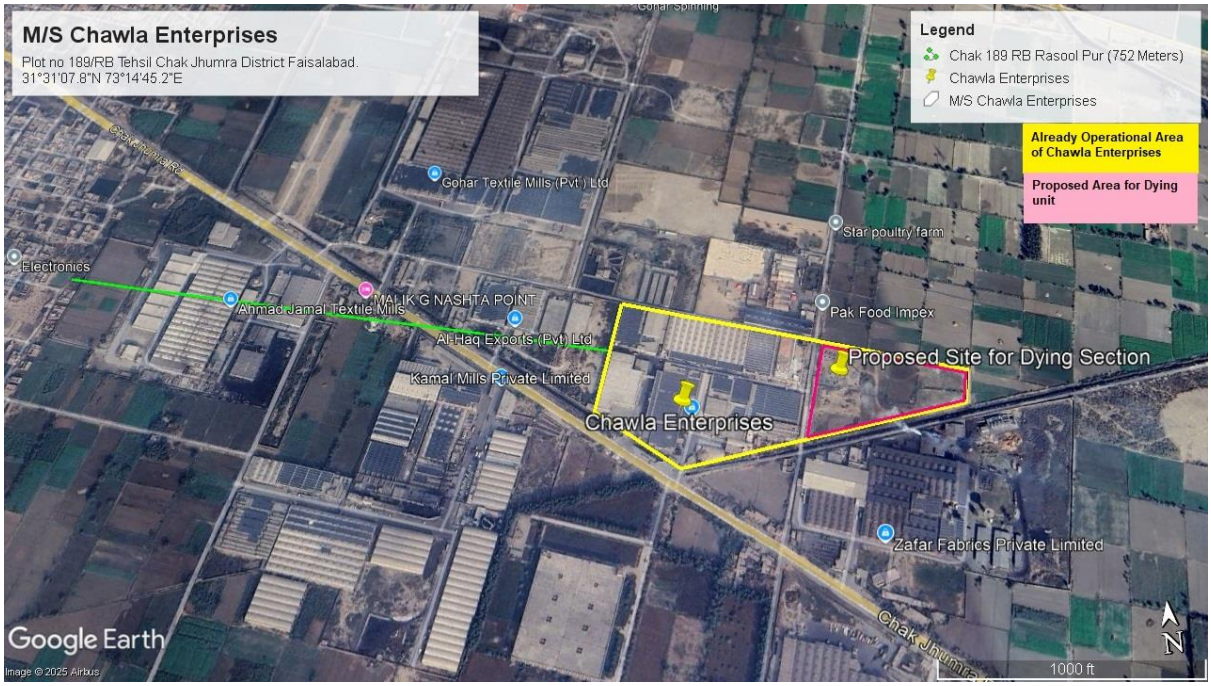


Figure 1: Project Site

Environmental sensitivity of the project includes the distance between the project area periphery from ecologically important features and socially significant infrastructures present in the study area. No ecology sensitive receptor such as; forest or reserved area is present within 5 km vicinity that could be impacted due to the installation and operation of the proposed project. There are no particular sensitive areas as project is located far from populated areas.

1.4 Regulatory Compliance

As per IEE/EIA Regulations 2022, it is mandatory for the proponent of any development project to obtain Environmental Approval (NOC) from EPA by filing an IEE or EIA as the case may be. The said project is proposed by the proponent to meet the ever-increasing demand of dyed fabric products for the development. For this purpose, the proponent has decided to engage environmental consultants, M/S EnvironTech Consultants to prepare EIA Report. The purpose of this study is to identify the environmental and social baseline of the project and study area i.e., physical, biological, socio-economic, cultural changes and to assess all possible

impacts anticipated during the installation and operation phases of the proposed project with the aim to find out appropriate mitigation measures to either eliminate those impacts or to bring them to acceptable level as well as to formulate Environmental Management and Monitoring Plan (EMMP) for implementation in sustainable manner. This EIA Report provides relevant information as required under the officially approved format, to help the decision makers i.e., EPA Punjab before issuing for the Environmental Approval.

Following rules, regulations and acts are considered for the commencement of the proposed project:

- Punjab Environmental Protection Act, 1997 (Amended 2012)
- Punjab Environmental Quality Standards (PEQS)
- Self-Monitoring and Reporting Rules (SMART)
- Punjab Fertilizer Act 2018
- Environmental, Health and Safety Guidelines

1.5 The Proponent

The details of the proponent of the proposed project are given below:

Table 3: Details of Proponent

1.	Name	Mohammad Jameel Chawla S/O Mohammad Ibrahim CNIC No: 33100-6868647-9
2.	Company	Chawla Enterprises.
3.	Address	Canal road, House # 73, Street # 1, Raza Gardens Faisalabad, Tehsil & District Faisalabad.

1.6 Scope of Project

Pakistan is known for producing high-quality yarn, which is a key raw material for the textile industry. With 60% of the nation's exports coming from the textile industry, Pakistan's economy is significantly impacted. To thrive in the extremely competitive global world of today, the textile industry must modernize its supply chain, boost productivity, and enhance value-addition. The goals of the Textile Industry Division are to create plans and strategies that will help the textile industry overcome these obstacles and become competitive on a worldwide scale. Despite facing challenges such as power shortages and competition from other countries, the textile industry in Pakistan remains a vital sector for the country's economic development.

In the most recent financial year, Pakistan exported textiles worth $19.329 billion, the largest amount ever. Exports began to fall in October 2022 after registering a gain of a single digit over the first three months of the current fiscal year as a result of the textile sector's inability to maintain the trend of positive development.

According to the data, the growth in textile exports in July, August, and September 2022 was just 1%, 8%, and 9%, respectively. Yet, in October, November, December, and January 2022 respectively, exports horrifyingly fell by 15%, 18%, 15%, and 12%. According to the Pakistan Bureau of Statistics, the textile export contributed 61% to the total volume of exports of $31.8 billion during the previous year.

1.7 Details of Consultant

The proponent of the **Chawla Enterprises** has engaged **EnvironTech Pvt. Ltd.** to carry out the EIA Study for the establishment and operation of aforesaid project in accordance with Punjab-EPA guidelines. For this purpose, the company engaged the group of professionals which comprises of environmental specialists and social scientists. The details of the consultant are given below:

Table 4: Consultant Details

Sr#	Consultant Details	
1	Consultant	***EnvironTech Consultants (Pvt) Ltd.***
2	Address	Office no.11 (2nd floor) Centre point Plaza, Main Boulevard Gulberg –III, Lahore.
3	Contact No.	0301-8176593
Focal Person		
4	Name	Amna Hafeez

To prepare EIA Report of the respective project the company engaged the following experts. The details of the experts are given below:

Table 5: List of Experts

Name of expert	*Position held*	*Highest Qualification*
Dr. Mateen Shafqat	Chief Advisor	PhD Environmental Sciences, PMAS, Arid Agriculture University
Mr. Shahzaib Ahmed	Social Scientist	M. Phil Development Studies, PIDE, Islamabad.
Arslan Iqbal	Environmental Specialist	M. Phil Environment Sciences,

		The University of Lahore BS Environmental Sciences The University of Lahore
Jawad Shafiq	Environmentalist	BS Environmental Sciences University of Gujrat
Amna Hafeez	Environmental Executive	M.Sc. Mountain Conservation and Watershed Management, University of the Punjab, Lahore
Huda Ashfaq	Environmentalist	M.Phil. Environmental Sciences, UVAS, Lahore.
Aisha Mushtaq	Environmentalist	M.Phil. Environmental Science, LCWM, Lahore.

1.8 1.8 Purpose of Report

The main objectives of this EIA Study were:

- To determine and record the state of the environment of the project area to establish a baseline in order to assess the suitability of the project in that proposed area
- To identify pre-construction/design, construction and operation activities and to assess their impacts on environment
- Provide assistance to the proponent for planning, designing and implementing the project in a way that would eliminate or minimize the negative impact on the biophysical and socio-economic environment and maximizing the benefits to all parties in the cost-effective manner
- To present mitigation and monitoring plan for smooth implementation of the suggested mitigation measures and supervise their efficiency and effectiveness
- To provide opportunity to the public for understanding the project and its impacts on the community and their environment in the context of sustainable development
- Prepare an EIA Report for submission to the EPA, Punjab for Environmental Approval (NOC)

2. SCREENING AND SCOPING

2.1 Screening/Type and Category of Project

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

2.2 Scoping:

1. Spatial and Temporal Boundaries of Environmental Assessment:

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

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

2. Views, Concerns and Suggestions of Various Stakeholders

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

- Removal of shrubs and trees should be avoided to the extent possible
- The project will become the source of income for local to earn their livelihood easily and honorably
- The area will become further developed
- For the solid waste management and waste disposal, proper disposal techniques should be adopted
- Employment opportunities will be generated, and locals should be hired on the priority basis
- The air pollution is one of the major impacts of the proposed project, so ambient air quality should be monitored regularly

- Water spraying/sprinkling should be done on the regular basis during construction phase to avoid dust emissions
- Removal of shrubs and trees should be avoided to the extent possible
- Good relations with the local communities will be promoted by encouraging Contractor to provide opportunities for skilled and unskilled employment to the locals as well as on-job training
- The contractor should prefer hiring local labor from adjacent nearby villages
- Indigenous tress around the facility should be planted to control air pollution and as the compensation
- Noise reducing barriers should be installed to reduce noise pollution as the nearest community lies within the radius of 0.8 km

Concerns

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

3. Significant impacts and factors to be determined

The proposed project is of manufacturing of tent. The nature of the land is Self-developed and current status of land is constructed having native vegetation such as Neem, Kikar, Safeda and wild grass. The study area is fertile, leveled and agricultural land. In addition, to the noise and fugitive dust emissions during the development phase solid waste management and disposal issues may arise along with wastewater disposal issues. There are few minor impacts associated with the operation of manufacturing unit includes the management of the municipal solid waste generated during the, raw-material storage which will be managed according to local practices of area.

The impacts from the establishment of Chawla Enterprises will occur during the operation due to the civil work involved and the people residing in the project area. These issues included; noise generation, fugitive dust emissions, solid waste management, wastewater disposal, top-soil removal, Health and Safety issues and

change in the geographic features of the area. These all problems should be addressed on-site where they are being generated, to avoid the residual or adverse impacts.

2.3 Alternatives

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

Site Alternatives

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

1) The site is at the safe distance from the nearest residential area.
2) The site is well connected to the other parts of the city through Southern By-pass Road.
3) No human settlements displacement or relocation associated with the project development and operation.
4) Operation of the proposed processing unit in the respective zone will provide job opportunities to local people and will improve their socio-economic status of the study area as 40 employees will be hired during the operational phase

Design/Technology Alternatives:

Latest machinery will be installed which shall be sourced by electricity, also environment and eco-friendly. So, no other technology will be taken under consideration

Environmental Alternatives:

No important religious, archaeological, recreational site or ecologically/declared protected area and human settlement exists within proximity of the selected site i.e., within 1 Km which is a safe distance. In view of these facts, it can be concluded that the selected site is best suited for the project and will not pose any adverse impact or threat on any component of the environment.

Economic Alternatives:

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

3. DESCRIPTION OF PROJECT

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

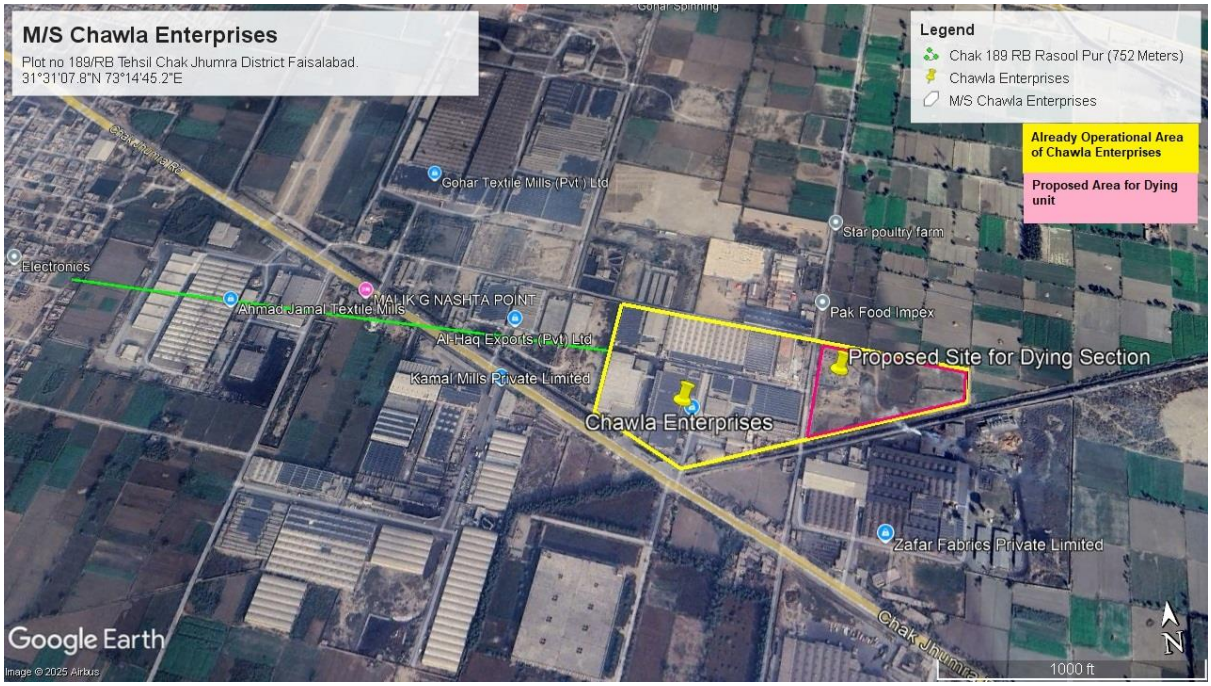
3.1 Objectives of Project

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

- To provide the employment to the people
- To change the social life style of the area
- Revenue generation for the Govt.
- To upgrade the socio-economic conditions of the area

3.2 Location and Layout of Project

The proposed location for the proposed project of Chawla Enterprises at Plot no 189/RB Tehsil Chak Jhumra District Faisalabad. The geographical location of the proposed area is 31°31'07.8"N 73°14'45.2"E



Proposed Project Site

3.3 Land Use on Site:

The Subject Project is aiming to establish a dying unit at the proposed location by M/S Chawla Enterprises. As, the building of already constructed unit of Chawla Enterprises was established back in the 90's hence, is exempted by the law and the

PET order case copy is also attached along with the EIA report, which proves that the complaint against Chawla Enterprises has been dismissed by the EPA department. The surface land in and around the project area is leveled and is Self-developed. No ecology sensitive receptor such as; forest or reserved area is present within 4 km vicinity that could be impacted due to the installation and operation of the aforesaid project.

3.4 Road Access

The project site is linked to Chak Jhumrah Road.

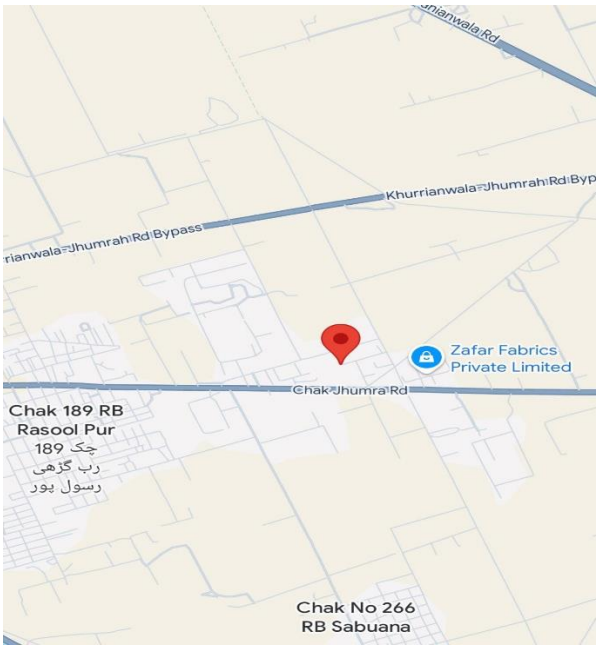


Figure 2: Road Access Map

3.5 Vegetative Features

The area around the project area is Self-developed. The vegetative features of the area include; safeda, bari, neem and kikar.

Table 6: Vegetative Features of the Project Area

Sr.#	Local Name	Type	Biological Name
1	Kikar	*Throne Tree*	*Prosopis juliflora*
2	Safeda	*Tree*	*Eucalyptus*
3	Sheesham	*Tree*	*Dalbergia sissoo*
4	Peepal	*Tropical Tree*	*Ficus religiosa*
5	Wild Grasses	*Grass*	--

3.6 Amenities

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

3.6.1 Electricity

Electricity will be purchased from WAPDA (FEPCO).

3.6.2 Ground Water Resource

During operational phase ground water will be consumed which will be supplied by the FESCO. water will be pumped from ground from the depth of 250ft. and 3000 liters/day will be used for the overall consumption and 1000 L/day generated wastewater will be treated through septic tanks prior to final disposal to the main drain. As no process wastewater will be produced so, no WWTP will be required.

3.7 Management Plans

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

3.7.1 Air Emissions

Particulate dust will be generated during construction phase and there will be no air emission expected from process activities however some negligible emissions from machinery will be produced to deal with that cyclones and dust collectors will be installed and proper tuning and maintenance of machinery will be done. For safety purpose the workers dealing with the process activities will be provided with masks, safety shoes and all other necessary PPEs. To reduce the public nuisance native trees will be planted on the boundary to reduce the nuisance and to reclaim the disturbed soil effectively.

Design and Working principle of Dry Scrubber

Dry scrubbers work similarly to other scrubbers. The system sprays a collection of dry reagents into an exhaust stream. These chemicals can react differently depending on which material they are specifically targeting for removal. Some of these materials neutralize harmful pollutants in the stream through a chemical reaction, while others cause a material to react and turn into a different substance. That substance then falls out of the gas stream or is caught in a particle screen.

Dry scrubbers remove acid gases; this is done by introducing a series of dry reactants to exhaust gas at high speeds. This neutralizes the pollutants in the gas. This task is done in three steps: gas cooling, reagent injection, and filtering. First, gas cooling will be done to prepare exhaust gases. In the gas cooling system, emission gases are cooled to make it easier to remove pollutants and other toxins from the gas. The exhaust gas

is diluted using an evaporative cooler. Once the gas has been significantly cooled the reagent injection can begin. It is in this step that the harmful components are actually removed from the gas. Components of the dry reagent are generally chosen because of their neutralizing properties; thus, sodium bicarbonate is included for the said project scrubber. A variety of powders are mixed together and fired at high pressures into the exhaust gas. Chemical reactions occur that reduce the acidity of the gas and remove harmful pollutants. The final step is using a fabric filter to capture the used scrubbing powder as the cleaned gas exits the scrubbing chamber.

Dry scrubbing has been embraced widely, and one of the biggest advantages to using it is the positive environmental impact. The removal of hazardous substances from exhaust gas is important as it prevents a large number of pollutants from escaping into the air. Dry scrubbers are also more commonly used than wet scrubbers mainly because they produce comparatively little waste material. Most of this material that is sprayed into the exhaust is burned off in the heat of the stream or is caught in a filter. The use of dry scrubbers is less expensive as there is no associated cost with removing, transporting, and storing waste water from wet scrubbers.

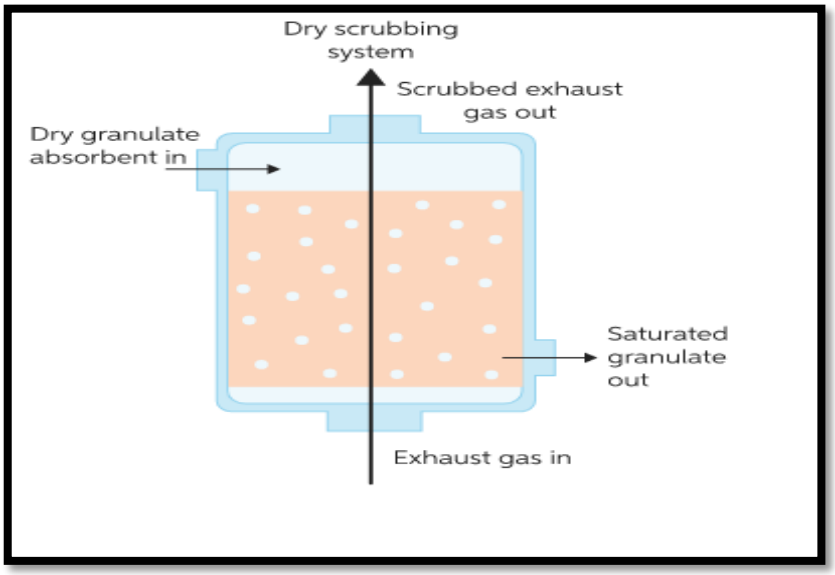


Figure 3: Design of Dry Scrubber

Specifications:

Voltage 440 Volt

Airflow (m^3/h or CFM) 1500- 5000 CFM

Orientation Horizontal

Type Dry Scrubber

Automation Grade Automatic

Material of Construction Stainless Steel

Power Source Electricity

Efficiency >95%

3.7.2 Wastewater Management and Disposal

The wastewater generated from the operation of proposed project would be of two types one is from process activities and second will be municipal in nature. For treatment of wastewater generated by the process activities a Wastewater Treatment Plant (WWTP) will be installed whose capacity will be 5m3/Shift while the chemical used for treatment will be alum and Polyelectrolyte, complete design and specification of Wastewater are attached as Annexure of this IEE report. Municipal wastewater will be treated through septic tanks. This involves the construction of concrete-made tanks (septic tanks) to store the sludge. The wastewater from the septic tanks is then channeled to main sewer:

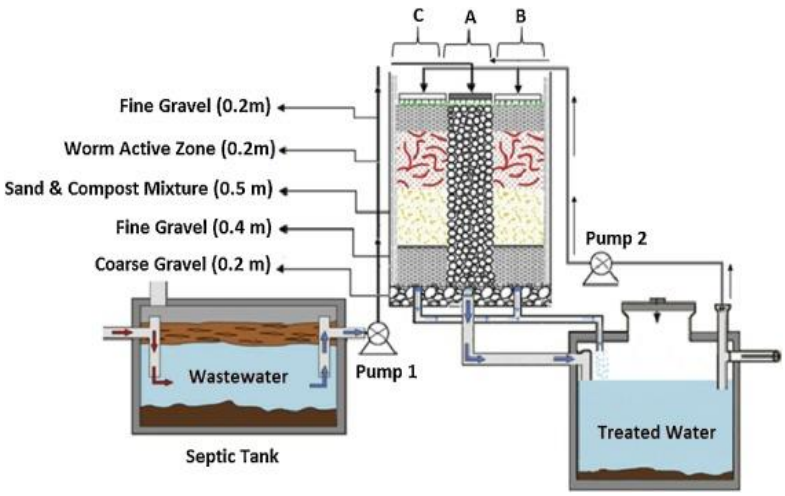


Figure 4: Design for Septic Tank

3.7.3 Waste Management

Most of the solid wastes that will be generated during the daily work can be divided into 3 main categories:

i. The ordinary household wastes that the workers and the staff generate all-day around; e.g., kitchen and food residues, clothing, personal unneeded articles, etc.

ii. Municipal residues; e.g., grass clipping, strings, scraps je sort, etc.

iii. Product Packing.

Quantity of solid waste will 25 kg/day and is going to be dumped in the containers (number, capacity and type will be identified and sufficient for the needs) which will be emptied by the municipality trash collection cars according to the acting regulations under the supervision of the concerned authorities. Collecting the trash/garbage will be followed on daily basis in disposable environmentally friendly shopping bags.

3.8 Staff/Manpower

During construction phase of the proposed project about 50-55 people will be engaged for development of the project. Around 50+ workers will be required during process related activity. The breakdown of the workers employed is given below:

Table 7: Details of the Officers

Sr#	Designation	No.
1	Production Manager	03
2	Deputy Manager	03
3	Asst. Manager	04
4	HSE Manager	03
5	Electrical Manager	02
6	Mechanical Manager	02
7	Metallurgical Manager	01
8	HSE Inspectors	03
Total Number of Officers		**20**

3.9 Emergency Preparedness

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

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

3.9.1 Safety Trainings

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

3.9.2 Use of Drugs and Narcotics

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

3.9.3 Personal Protective Equipment's

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

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

3.10 Cost and Magnitude of Operation

The proposed project includes the production of dyed fabric. List of machinery as well as chemicals MSDS is attached as an annexure with the EIA report.

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

Table 8: Breakup of Project Cost

Sr. No	Description	Amount Rs Millions
I.	Civil Works	1055
II.	Plant and Machinery	1000
III.	Licensing	26
IV.	Miscellaneous	5.00
V.	Environmental Budget	2.00
Total		2500

3.11 Land ownership Documents

Site selected for the proposed project is owned by the Proponent under the name of Chawla Enterprises. Land documents have been attached as Annexure of submitted EIA Report.

3.12 Schedule of implementation

The completion duration of Chawla Enterprises is about 03-04 months. There will be a symmetrical process.

Preconstruction phase

This phase includes:

- Site investigation & Evaluation
- Budgeting
- Design
- Schedules of working
- Obtaining all relevant NOC

Construction phase

This phase includes:

- Management team& Construction Crew
- Excavation
- Construction of building
- Provision of allied facilities
- Mitigation process
- Amenities Development
- Managing safety
- Monitoring & Evaluation

Operational phase

This phase includes:

- Implementation of fire safety, emergency evacuation plans
- Security management
- Finishing of amenities
- Plant operations

3.13 Basic Raw Materials Required by the Proposed Unit

The basic raw materials will be fabric

3.14 Machinery Details.

- **List of Machinery**

List of Machinery is attached along with the EIA report.

3.15 Manufacturing Processes Description:

Manufacturing is the process of turning raw materials or parts into finished goods through the use of tools, human labor, machinery, and chemical processing. Manufacturing is integral to the economy. To keep the project operational throughout the year, production of different varieties of fabric will be planned according to the seasonal trends.

3.15.1 Manufacturing process:

- Yarn

Yarn will be purchased from local market and it will go through the following process

- Knitting & Weaving

After receiving the yarn, send the yarn for knitting & weaving process.

- Dyeing, & Finishing

When the yarn weaved & knitted then the next process of dyeing will be start, after dyeing then it will go to printing & finishing

Finishing of fabric includes enhances the fabric's aesthetic and functional properties like, Softening e.g. Adds a smooth and soft hand feel.

- Packing

The finished fabric is rolled, folded, or packed according to customer requirements and

shipped to manufacturers or retailers.

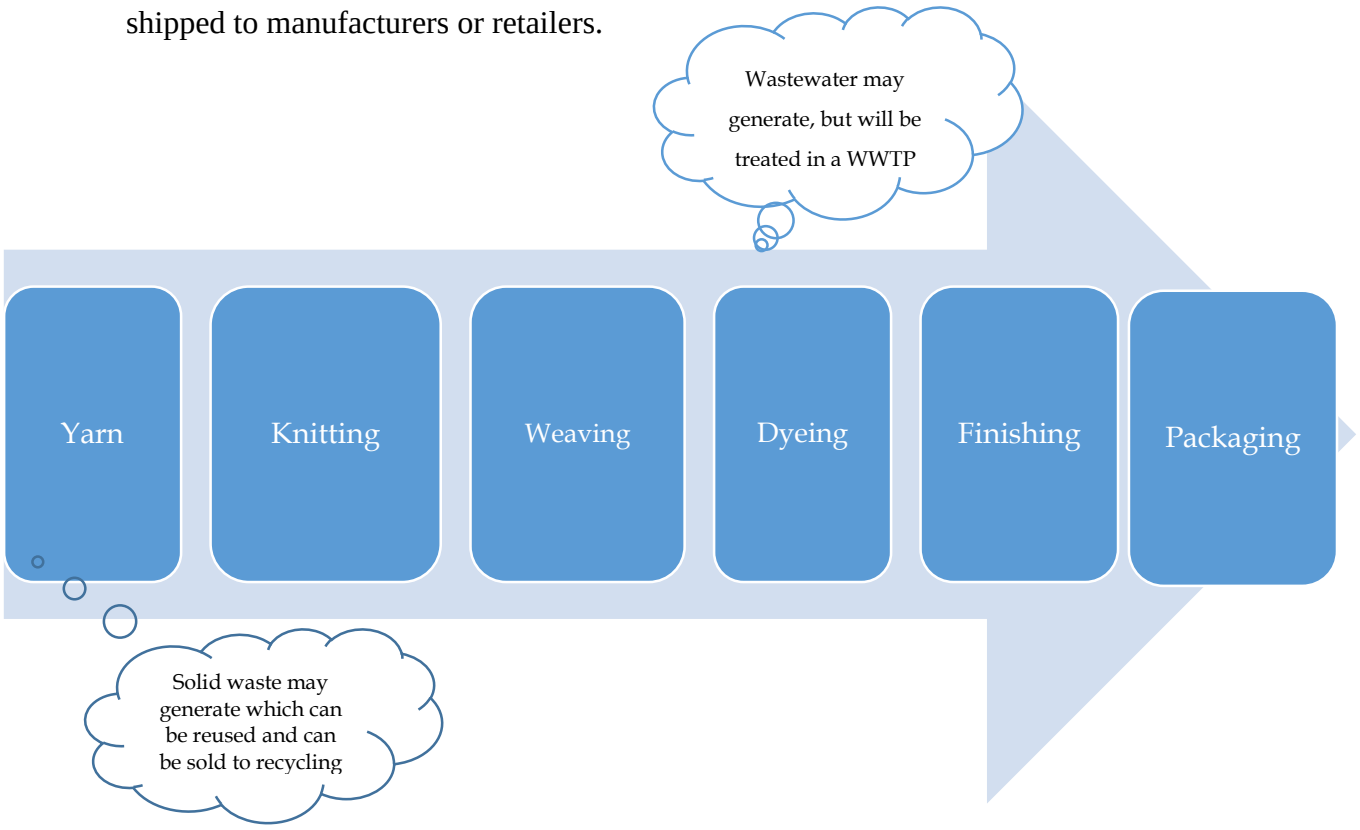


Figure 5 Manufacturing process

3.16 Relocation and Rehabilitation Plan

There exists no human settlement in safe radius of the selected project site to be displaced owing to the commencement of the proposed project. Moreover, no structure of any significance stands at the site is proposed to be relocated or dismantled. The project area is owned by the proponent. So, no restoration and rehabilitation are required.

4. DESCRIPTION OF THE ENVIRONMENT

This section covenants with the prevailing environmental conditions of the project area. Information that has been collected from different sources, including public literature, reports of other studies conducted in this area, knowledge with the proponent and the concerned government departments and the first-hand surveys and field measurements has been presented in this section. This encompasses all the important aspects of local environment; such as physical and biological resources, socioeconomic development and quality of living values.

4.1 PHYSICAL RESOURCES

4.1.1 Geography

The total area of the District is 5,856 square kilometer. It lies between longitude 73° and 74° East, latitude 30° and 31.5° north, at an elevation of 605 feet above sea level. There is no natural boundary between Faisalabad and the adjoining districts. Faisalabad is bounded by Hafizabad and Sheikhupura towards north and northeast, by Sheikhupura, Okara and Sahiwal towards east and southeast, and by Jhang and Toba Tek Singh towards west and southwest.

FDA's notified controlled area is 1,280 sq km River Chenab flows about 30 km in the northwest while River Ravi meanders about 40 km off the city in the southeast. Lower Chenab canal is the main source of irrigation water which meets the requirements of 80% of cultivated land. The soil of Faisalabad comprises alluvial deposits mixed with loess having calcareous characteristics and the soil is generally fertile

4.1.2 Geology and Soils

The agro-ecological zones of the country are presented in Figure 3. The project site falls under Zone-IV (b); the zone generally comprises sandy loam, and clayey loam.

Figure 6: Agro-Ecological Zones of Pakistan

Faisalabad plains are most probably underlain by the Potwar stratigraphy, but it would be deeply eroded. Moreover, very thick alluvial and older fluvial deposits (Recent to Miocene) before older eroded rocks are also encountered.

The geotechnical properties and mineralogical composition of the soil, das established during various studies / boring of tube wells for water supply by WASA confirm that the Faisalabad soil is composed of silty clay. The major mineral composition for Faisalabad soil is Quartz, Muscovite and Clinochlore, which shows that the alluvial deposit received sediments from metamorphic origin. In general, subsurface stratigraphy at the site consists of three basic lithological units as given below:

- Lean Clay/Silty Clay
- Sandy Silt/Silt
- Silty fine Sand/fine Sand

These soils are the alluvial deposits of the recent geologic times. The subsurface stratigraphy is as discussed below:

• The first soil unit of brown silty clay/lean clay forms the topsoil cover at the site at all the locations and generally continues to a depth of 1 .0 m- 3.5m below top of ground. This stratum contains trace fine sand and trace to little concretions at places. It is present in a soft to a stiff state of consistency and has low to medium plasticity.

• The second soil unit of brownish grey sandy silt/silt underlies the upper silty clay/ lean clay stratum. This layer has a thickness of 1.0 to 3.0m and is present in a firm state.

• The third soil unit of brownish grey non-plastic fine silty sand underlies the silt/silty sand stratum. It is present in a loose to medium-dense state.

The lithological distribution of soils consists of slightly cohesive, generally firm to stiff silty clay lean clay from 1.0 to 3.5m depth, followed by firm to stiff sandy silt/silt of 1.0 to 3.0m thickness in turn followed by medium dense silty fine sand. Groundwater is present at a depth of 4.5 to 5.0m below top of ground. The subsurface generally appears suitable for supporting light to medium loads through spread foundations placed at 1.0 to 2.0m depth. Besides, some isolated weak spots are also expected, which will require special measures to be adopted.

4.1.3 Climatology

4.1.3.1 Temperature

The climate of Faisalabad features a semi-arid climate in Köppen-Geiger classification, bordering a humid subtropical climate (Cwa) with very hot and humid summers and dry cool winters. The average maximum and minimum temperatures in June are 45.5 °C (113.9 °F) and 26.9 °C (80.4 °F). In January the average minimum and maximum are 19.4 °C (66.9 °F) and 4.1 °C (39.4 °F).

The summer season starts in mid-April and continues until late October. May and June are the hottest months, while July, August and the first half of September can be oppressively humid, except for the days when it rains. June is the hottest month in Faisalabad, when conditions are dry and dust storms are common. The coldest month is January, which is also a dry month with significant foggy days. The fog is

particularly dense at night and in early morning hours. The winter season starts in November and continues until early February. Spring begins after mid-February and lasts usually until late March, when temperatures begin to rise and conditions become drier and sunnier. The average annual rainfall is only about 602 millimeters (23.7 in), which is highly seasonal since approximately half of the yearly rainfall takes place in June, July, August and September during the monsoon season.

The temperature of the city has reached a summer maximum record temperature of 48.0 °C (118.4 °F), which was observed on 9 June 1947 and again on 26 May 2010. An extreme minimum temperature of −4.0 °C (24.8 °F) was recorded on 15 January 1978. The record 24-hour rainfall stands at a massive 264.2 millimeters (10.40 in) recorded on 5 September 1961, which is roughly 70 percent of the city's annual average rainfall. The highest wind gust ever recorded in Faisalabad occurred during a severe dust-thunderstorm on 2 June 2000, when the maximum wind speed reached 151 kilometers per hour (94 mph; 82 km).

4.1.3.2 Wind Characteristics

Apart from temperature and rainfall records, the winds in Faisalabad are generally light. The city lies in an area with low wind speeds. Westerly breeze dominates the afternoons, while the nights are calm. South east / easterly winds are common here during the monsoon season. Faisalabad, being in the plains, can experience severe thunderstorms and high wind gusts that can be damaging to its crops.

Table 9: Wind Speed and Direction

Month	Wind Frequency (%) Speed in Knot Ranges						Predominant Direction From
	Calm	3-Jan	6-Apr	10-Jul	16-Nov	17-21	
January	72	25	3	0.4	-	-	NW
February	60	33	7	1	-	-	NW
March	55	35	7	2	1	0.1	NW
April	48	40	9	3	1	0.1	NW
May	51	39	7	3	1	-	NW
June	40	45	12	4	0.4	-	SE
July	43	46	9	2	0.4	-	SE
August	52	42	5	1	0.4	-	SE
September	65	30	5	0.3	0.1	0.1	SE
October	75	22	1	1	-	1	NW
November	79	19	1	1	0.1	-	NW
December	83	16	1	-	-	-	NW
Yearly Average	**60**	**33**	**6**	**1**	**0.3**	**0.1**	**NW**

Note: NW = North West, SE = South East, 1 Knot = 1.854 km/hour

Wind storms of moderate intensity occur during summer (April - July). Their occurrence is maximum in June when low pressures are caused due to high temperature.

4.1.3.3 Rainfall/Precipitation

The average annual rainfall in Faisalabad is around 375 millimeters (14.8 in). About half of the yearly rainfall occurs during the monsoon season in July and August. From 1985 to 2016, the average annual rainfall increased from 300 to 420 millimeters. The wettest period was from 2001 to 2008, with an average rainfall of 421.61 millimeters. The Regional Agro meteorological Center (RAMC) Faisalabad has been recording meteorological data since March 19, 1988. The RAMC provides the data to the Ayub Agriculture Research on a daily basis

4.1.4 Surface Water & Ground Water

a) Surface Water

No surface water body in the form of river, canal or stream exist in the vicinity of the project site.

b) Ground Water

Ground water quality is fresh (defined as acceptable in terms of its salinity).Raw water abstracted from the deep tube wells is believed to be essentially bacteria free. The water quality in the upper 50 meters zone of subsoil is generally brackish. For city's drinking purposes water is abstracted from groundwater aquifer by means of tube wells located throughout the city. The quality of water is generally adequate for direct consumption. About 83% of city population is consuming groundwater for drinking purposes.

4.1.5 Seismology

Pakistan Building Code distributes the country into 4-zones, Figure 4. The project site falls in Moderate damage Zone, as such structural design of buildings and others will follow the applicable criteria for the zone.

Seismic details are very important consideration for any planning activity. As it directly lays impact on the construction of site. The project lies in seismic Zone-2A, seismic zoning map of Pakistan as displayed below. This Zone-2A prone to minor damage, distant earthquake may cause damage to structure with fundamental periods greater than 1.0 second.

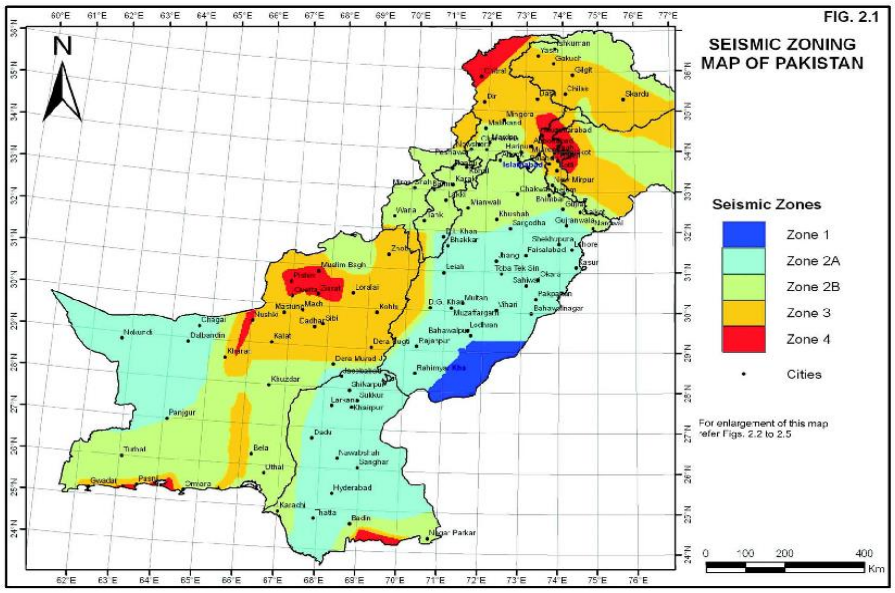


Figure 7: Seismic Zones of Pakistan

4.1.6 Flooding

No surface drainage problems are foreseen as surface water can be disposed in the existing primary and secondary drainage network including partly moving into the sewerage.

4.1.7 Water Logging and Salinity

There are no signs of water logging in the project site.

4.1.8 Air Quality

Motor vehicle emissions are composed of the by-products that come out of the exhaust systems or other emissions such as gasoline evaporation. These emissions contribute to air pollution and are a major ingredient in the creation of smog in some large cities. Main source of air pollution in the Project area is traffic congestion that occurs off and on in the Project Area. Traffic load has increased manifold due to rapid growth of the City. Ambient air is being polluted due to emission of fuel gases like Carbon Monoxide (CO), Nitrogen Oxide (NOx) and Sulphur Oxide (SOx) due to the vehicle exhaust. Untreated fuel from rickshaws also contain trace amount of Lead (Pb) in it.

Air Quality Determined

The quality of air has been determined through monitoring (24-hour basis) at the project site.

As a result of traffic blockages, vehicular emissions are higher at the junction, however due to the presence of plantation and green areas, air quality is generally satisfactory in the morning but deteriorates during the day. The quality determination has been made.

4.1.9 Noise Level Determined

The existing status of the project area is mostly residential and some road crossings therefore noise is serious issue only at road crossings. The average value of noise along the road crossings close to PEQS and WHO limits and is expected that in the

construction and operation phase this will go beyond limits. Roadside noise level was measured from the edge of the road (about 7.5 m from the source).

4.2 Ecological Resources

4.2.1 Marine and Aquatic Ecology

This is not applicable to the Project area.

4.2.2 Flora

The diversity and distribution of plant species within the Faisalabad depends upon the availability of water and the underlying geology. There are significant numbers of trees in Green Belts en-route. Kikar and Beri trees are present in study area.

4.2.3 Fauna

Common birds found in the area are crows and sparrows. Domestic animals are seen grazing in the agricultural land as well as on the project site. Chirping birds are having their nests at the well grown trees that are providing a natural habitat for the birds.

Some squirrels, parrot, rats, weaver, sparrows are also found in the area. Different species of reptile and amphibians such as lizards and frogs are also found. Various bird species known to occur in the area include myna, bulbul, crow and sparrow.

4.2.4 Endangered Species

No endangered species exist in the project area.

4.3 Economic Development

4.3.1 Agriculture, Industries and Tourism

The agrarian profile of Faisalabad district has changed altogether. It is now more self-developed than before. Cash crops include tobacco; mutter (peas) wheat and sesame. It has been observed that wheat crop is producing more yield with smaller area in the district than in many other districts due to suitable soil conditions.

Vegetables are grown in abundance as the water and soils are suitable for cultivation, and include potato, carrot, lady finger, chili, onion, bitter gourd, cucumbers, coriander and cauliflowers. Fruits grown include; citrus, guava, mango, watermelons, banana and peach.

Faisalabad is the 1st biggest trade center in Punjab which exports and imports a sizable quantity of different types of goods. Its major self-developed items of trade include electrical fans, motors, transformers and electrical goods, rubber and its products, bicycles and auto cycles,

food products, beverages, body buildings, handicrafts, leather shoes, printing and publishing chemicals, photo goods and cinema films, as well as agriculture products and dry fruits. After Karachi, Lahore, Faisalabad is the biggest self-developed area in Pakistan. There has been a steady expansion of industries in and around Faisalabad since independence. Self-developed consumers are causing the greatest demand for electricity, and are also worst affected by power shut downs. There are thousands of self-developed and commercial businesses in the vicinity of the project area. There are also agricultural businesses on the fringes of the urban areas and tourism is also an important business in Faisalabad.

Agricultural Development

The project site falls under self-developed area. Industries are present around project site. So need of agricultural development is not required.

4.3.2 *Transportation*

Faisalabad is linked with the rest of the country by air, rail and road. Many new Motorways have been also completed which are operational from April-2020 due to which routs to each part of the country has become easy.

The number of vehicles, notably private cars, has increased dramatically over the last few years, resulting in all kinds of environmental problems. Traffic load has far exceeded the carrying capacity of roads in Faisalabad city, as well as in adjoining smaller towns. Valiant efforts are being made to cope with the situation by widening existing roads, and constructing new roads, with a further series of impacts on the environment, and with little overall result.

4.3.3 Energy Sources

Reserves of fossil fuels the main sources of energy in Pakistan and other sources include hydropower. In the study area there is no major source of electricity generation. In the urban areas, the main sources of energy are electricity, piped and bottled natural gas, and fire wood. The sourcing of fire wood and other biomass (especially in suburban and rural fringe areas) is concentrated on home garden production of fuel wood and the extraction of wood from forests, woodlands, crop plantations and agricultural residues. The other significant energy sources in the area

are kerosene and LPG. There are numerous petrol stations, and LPG and CNG dealers in the district.

4.4 Quality of Life Values

4.4.1 Communities Population and Features

4.4.1.1 Demographics

Faisalabad District (Lyallpur District until 1979) is one of the districts of Punjab province, Pakistan. According to the 2023 census of Pakistan it had a population of 9,075,819, of which 3,691,999 were in Faisalabad City. It is the third largest city of Pakistan after Karachi and Lahore.

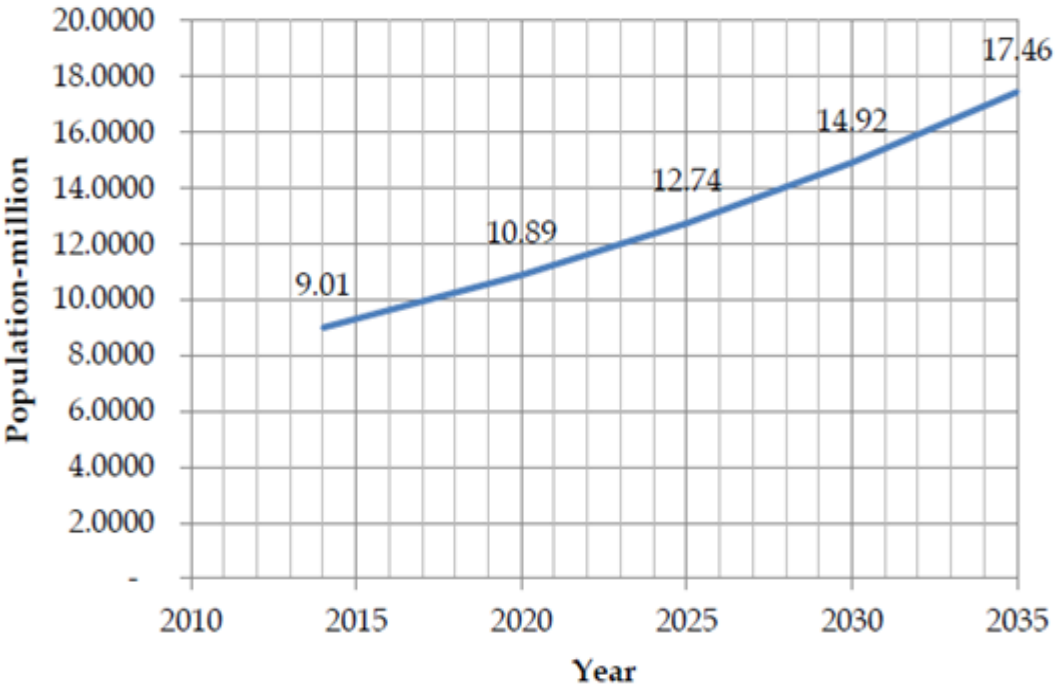


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Figure 8: Projected Population of Faisalabad

Metropolis city of Faisalabad is expanding at a rate of about 3.2% per annum and its present population of about 0.7 million is anticipated to be above 1 million by the end of Year-2035, the design period for the proposed roads. With increasing population coupled with socioeconomic level, the more and more vehicles will be on the road and result in congestions if additional capacity– convenient links are not provided.

4.4.2 Socioeconomic Conditions

Socioeconomic status (SES) is often measured as a combination of education, income and occupation. It is commonly conceptualized as the social standing or class of an

individual or group. SES is a key factor that influences quality of life for children, youth and families.

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4.4.2.1 Literacy Rate/Education

According to the data collected with the help of a questionnaire, education level of the people living there was as follows:

As regard to the level of Educational attainment, 15% and 18% of respondent were up to primary and middle level, respectively. However, 29% of respondents were matric, while remaining 20% of respondents were had education up to intermediate and 18 % were B.A and above.

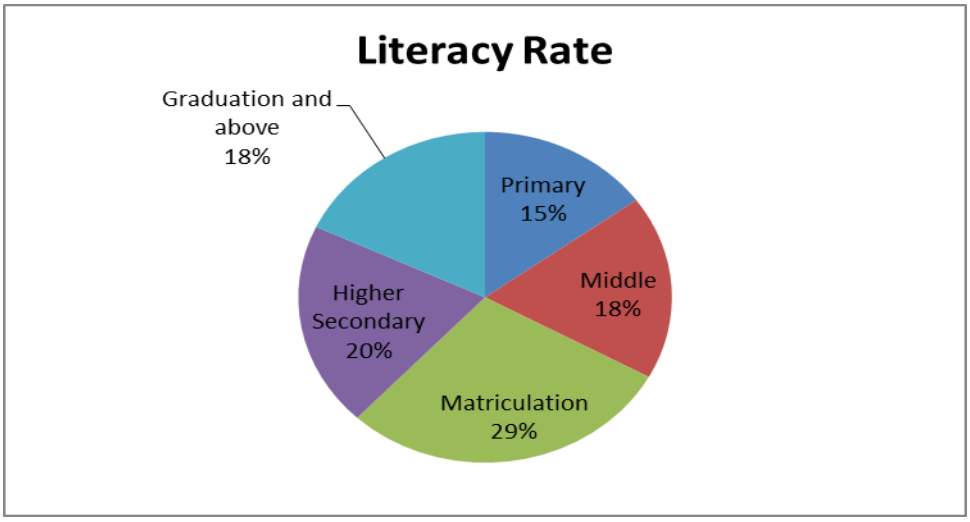

Figure 9: Literacy Rate of Project Area

4.4.2.2 Income

It is to notify that people living in the vicinity mostly belong to a middle class and upper class. Most of the people work privately and have business. Monthly income of the residents living in the proposed project area is given in Figure 7.

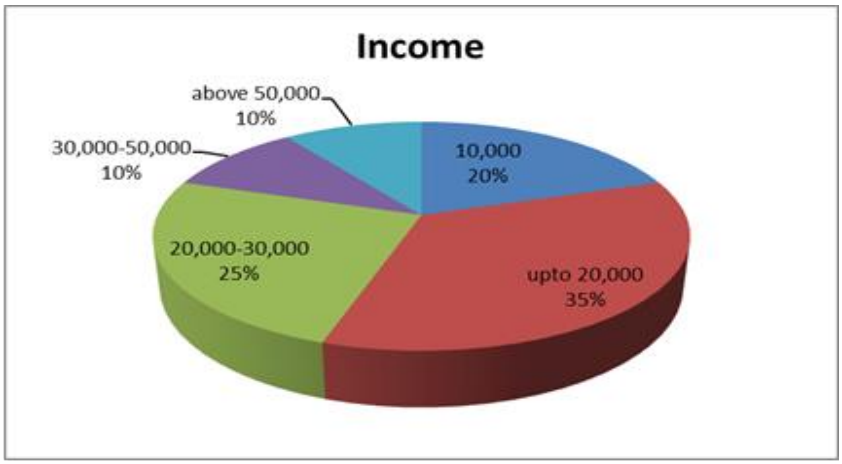

Figure 10: Income Level

4.4.2.3 Occupation

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

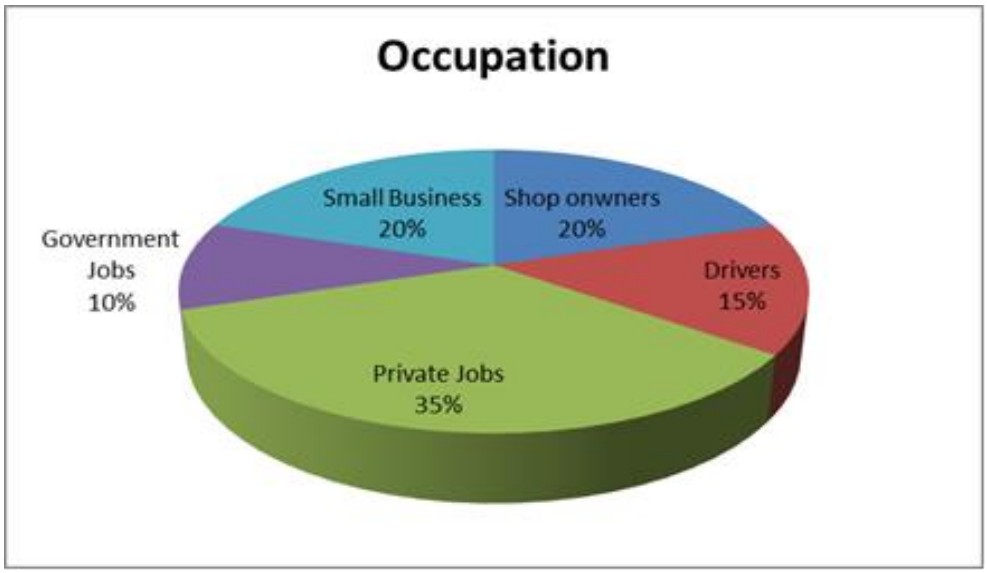

Figure 11: Occupation of the locals

4.4.2.4 Languages

Urdu and Punjabi are the predominant languages spoken in the district.

4.4.2.5 Dres

Majority of the people wear Qamiz and Shalwar. English dress; shirt and trousers are also common.

4.4.2.6 Health Facilities

Following health facilities are located within safe distance in Faisalabad District.

- Chiniot Hospital
- DHQ Hospital
- Allied Hospital Faisalabad
- HMC Hospital
- Government General Hospital, Samnabad

The subject project also have hospitals within the safe distance which are easily accessible during time of emergency.

- Social Security Hospital, Khurianwala (750 m)
- Punjab Medical Centre (3.6 Km)

4.4.2.7 Educational Facilities

Following Educational Facilities present near the project site:

- Govt. Higher Secondary School
- Sandal College Faisalabad.
- Concept group of Schools and Collages

4.4.2.8 Cultural, Archeological and Historical Sites

There are no officially protected heritage sites or historic, religious or archaeologically important sites located in the project work area. As the project site is located in the main city so there are a number of mosques and graveyards within about 500 m of the works but no major historic or archaeological features are present.

4.5 Stakeholder Consultation

For ascertaining the perceptions of different stakeholders about the project, meetings were held with them. These meetings were held in an open atmosphere, in which participants expressed their views freely. Informal group discussions were also held as an additional tool for the assessment of the perceptions of the stakeholders.

4.5.1 Methods of Public Consultation

Public Consultation was carried out for a day. Socio-economic survey forms are attached as Annexure with IEE report. The following methods were used for public consultation with project stakeholders in order to ascertain their stakes regarding project implementation.

- Focused Group Discussion
- Scoping Sessions
- Formal Group Meetings
- Informal Group Meetings.

4.5.2 Project Response

93% of the respondents were of the opinion that this project should be implemented. In their opinion, construction of the project will create labor opportunities for locals and it will help to improve economic conditions of area. Construction of the Housing Scheme will also provide better living facilities to the people. The respondents also provided the mitigation measures like certified contractor must be hired, proper plantation should be done, proper procedures should be followed etc. They said, if mitigation measures will be implemented they would have no objection.

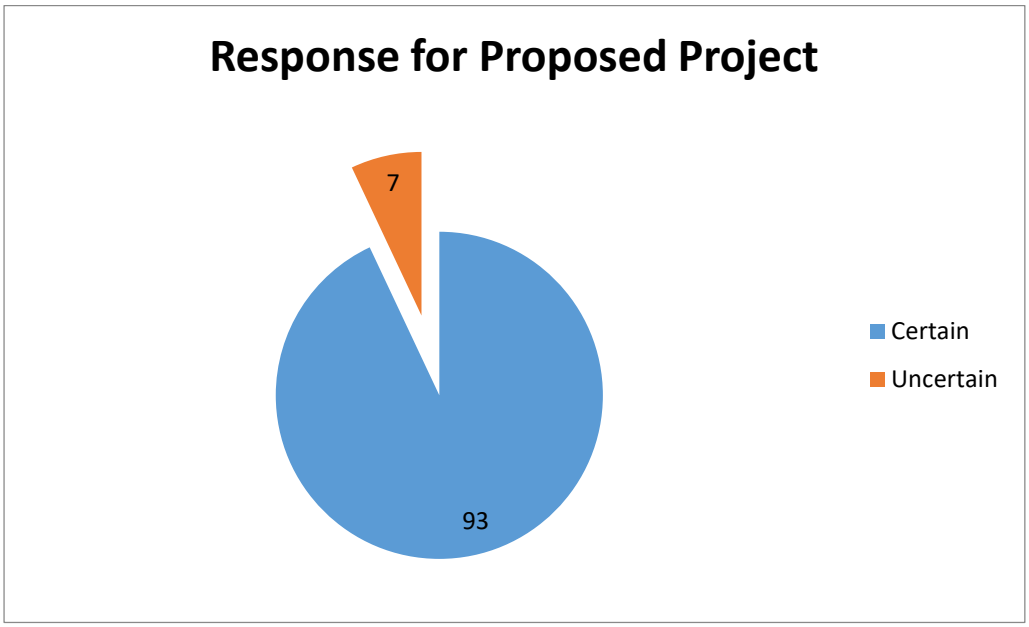

Figure 12: Percentage of people in favor or against the project

4.5.3 Concerns and Solutions

Table 10: Concerns of Stakeholders

COMPONENTS	CONCERNS	SOLUTIONS
Environmental Enhancement	Trees should be planted to avoid any impact	• Trees will be planted along boundary of project • Indigenous tress around the facility should be planted to control air pollution • Removal of shrubs and bushes should be avoided to the extent possible
Socio-Economic Uplift	Workers should be hired from local community	• Proponent has considered hiring labor from local community to enhance the socio-economic condition of the area as this aspect is included in the scope of the proposed project.
Noise	As residential and commercial areas nearby	Proponent will ensure to restrict construction activities during night time. Labors will be trained to stop working in any nuisance caused by the activities.
Traffic Congestion	Busy area, commercial and residential settlements	Construction activities will be carried out at a designated place. Working will be slowed down during peak hours. Construction

		material will be supplied at night time mostly to avoid any nuisance to public.

5. PUBLIC CONSULTATION AND INFORMATION DISCLOSURE

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

5.1 Proponent's Environment Management Team

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

Roles and Responsibilities		
Sr#	**Concerned Persons**	**Duties**
1	The Project Manager	Following will be the responsibilities of the Project Manager • Ensure that the contractor is aware of all specifications, legal constraints, standards and procedures pertaining to the project specifically with regards to environment. • Ensure that all stipulations within the EMMP are communicated and adhered to by contractor(s) • Monitor the implementation of the EMMP throughout the project by means of site inspections and meetings. This will be documented as part of the minutes of the site meeting documents • Ensuring project execution within defined budget and timelines • Conducting regular check of the project status and meetings with project team • Provide support and guidance to project team as and when needed • Project Manager is expected to continually monitor and improve the overall performance of their operation
2	HSE Manager	In addition to the health and safety responsibilities held by staff, managers and supervisors must do whatever is reasonably practical to ensure that both the workplace and the work itself are safe. This includes: • Ensuring that staff are appropriately trained and supervised

		• Identifying, assessing and managing health and safety risks • Consulting with workers (including staff, affiliates and contractors): i. Health and safety risk assessments ii. Decisions are made about the measures to be taken to eliminate or control these risks iii. Health and safety risk assessments • Implementing health and safety risk management programs relevant to their operations, teaching, research and consulting functions and work environment • Reporting (to the Human Resources Unit), investigating and responding to all hazards, accidents, incidents and taking action to control the risk • Assisting with the development, implementation and maintenance of a return to work program for injured staff. • Be fully conversant with the EIA and conditions of its approval • Be fully conversant with the EMMP • Be fully conversant with all relevant environmental legislation, policies and procedures, and ensure compliance • Convey the contents of this document to the contractor site staff and discuss the contents in detail with the Project Manager and Contractor • Undertake regular and comprehensive inspection of the site and surrounding areas in order to monitor compliance with the EMMP • Take appropriate action if the specifications contained in the EMMP are not followed • Monitor and verify that environmental impacts are kept to a minimum, as far as possible • Review and approve construction methods, with input from the Site Manager, where necessary • Ensure that activities on site comply with all relevant environmental legislation • Compile progress reports on regular basis, with input from the Site Manager, for submission to the Project Manager, including a final post excavation audit • Liaise with the Site Manager regarding the monitoring of the site • Report any non-compliance or remedial measures that need to be applied

		• All environmental problems arising on the construction area will be reported to the Site Manager by the Environmental Manager. Reports on such problems will be submitted to the Project Manager by the Site Manager

5.2 The Responsible Authority

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

- Share information with stakeholders on proposed project installation and operation
- Access the impacts on the physical, biological, and socioeconomic environment
- Understand stakeholder concerns regarding various aspects of the project commencement
- Find out valuable suggestions by the stakeholders to improve the proposed project design
- Understand the perceptions, assessment of social impacts and concerns of the affected people/communities of the project area
- Find out the awareness level and situation of acceptability to identify any issues for the implementation of the proposed project
- Invite people to express their views about the positive/negative impacts on their lifestyles and environment
- Disclose information about contact offices/officers for any complaints/queries

It is envisaged, there will be no social impact being foreseen due to the construction and operation of Chawla Enterprises .at the proposed location. This EIA Report includes all the comments, which were taken into account during the social survey and preparing the definitive development concept for the installation and operation of Chawla Enterprises. Public consultation performs is attached as Annexure of this EIA Report.

5.3 Objectives of Consultation

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

5.4 Identification of Stakeholders

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

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

5.4.1 Direct Stakeholders

No disturbance in the local community is being foreseen due to the installation of the aforesaid project as the community is at a safe distance. No property loss is being envisaged due to the installation of a dyeing unit at Chawla Enterprises.

5.4.2 Indirect Stakeholders

Indirect impact will occur on those who are living or doing business within a Project Area of Influence (AOI). In the case of the proposed project, the citizens of nearby small towns) will get opportunities of being employed. So, in the early development

stages and during the operational phase the people will be benefited due to the dyeing unit installation of the Chawla Enterprises.

5.4.3 Other Departments and Agencies

Following departments are related to the project in public consultation:

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

5.5 Public Disclosure

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

5.6 Consultation Process

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

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

Various meetings with the stakeholders were held the following objectives:

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

5.7 Environmental Practitioners and Experts

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

Table 11: List of Environmental Experts Consulted

Name	Qualification	Comments/suggestions
Dr. Sabiha Khurram	Ph.D. Environmental Sciences	Following comments are summarized: ▪ Latest technology must be preferred ▪ Regular monitoring should be conducted
Ms. Nusrat Ehsan	Ph.D. (scholar) Environmental Sciences	▪ She said that current project must be installed as: ▪ Quality Agro-chemicals will be available ▪ Import cost will be reduced ▪ Good household practices must be practiced

Mr. Danial Zaib	BS Environmental Sciences	He said that: ▪ Locals should be preferred for employment. ▪ In case of outsider's residence must be provided ▪ Proper mitigation measures must be adopted while construction and operation of this project

5.8 Affected and Wider Community

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

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

5.8.1 Views, Concerns and Suggestions of Various Stakeholders

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

- Removal of shrubs and trees should be avoided to the extent possible
- The project will become the source of income for local to earn their livelihood easily and honorably
- The area will become further self-developed
- For the solid waste management and waste disposal, proper disposal techniques should be adopted
- Employment opportunities will be generated, and locals should be hired on the priority basis
- The air pollution is one of the major impacts of the proposed project, so ambient air quality should be monitored regularly.

- Water spraying/sprinkling should be done on the regular basis during construction phase to avoid dust emissions
- Removal of shrubs and trees should be avoided to the extent possible
- Good relations with the local communities will be promoted by encouraging Contractor to provide opportunities for skilled and unskilled employment to the locals as well as on-job training
- The contractor should prefer hiring local labor from adjacent nearby villages
- Indigenous tress around the facility should be planted to control air pollution and as the compensation
- Noise reducing barriers should be installed to reduce noise pollution

Concerns

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

5.8.2 Addressing Public Concerns

The best mechanism of effective communication between the community and the proponent is the by the nomination of the representative of the community and all the issues/concerns must be recorded for future reference. This representative may be the member of the Grievances Redressed Committee (GRC).

a. Grievances Redressed Committee

Grievances Redressed Committee (GRC) will be formulated by the proponent to address the concerns of the locals during the construction phase. The main role of the GRC will be to resolve the issues of the community associated with the proposed project, if any.

5.9 Acceptance Level of the Project

The opinions of the respondents were noted during the public consultation. The majority of respondents (88%) of were in favor of the proposed project. They expect that installation of the proposed unit will also increase the economic value of local assets. According to them the proposed project will boost the employment opportunities, mobility access to resources and social amenities

6. POTENTIAL ENVIRONMENTAL IMPACTS AND MITIGATION MEASURES

6.1 General

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

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

Magnitude

Type of impact (direct, indirect, cumulative)

- Immediacy

Temporal extent (during construction, after construction)

- Spatial extent (local, widespread)

Sustainability and Reversibility

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

The basic purpose of mitigation measures is to reduce the impacts of the establishment of dyed fabric manufacturing unit on the socio-environment up to the maximum possible extent. The mitigation measures are suggested based on the following parameters:

6.1.1 What is the problem?

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

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

The impacts from the establishment of dyed fabric manufacturing unit will occur during the operation due to the civil work. These issues included; noise generation,

fugitive dust emissions, solid waste management, wastewater disposal, top-soil removal, Health and Safety issues and change in the geographic features of the area. These all problems should be addressed on-site where they are being generated, to avoid the residual or adverse impacts.

6.1.3 Where problem should be addressed?

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

6.1.4 How the problem should be addressed?

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

6.2 Ways of Achieving Mitigation Measures?

Following ways will be adopted to reduce the impacts of the dyed fabric manufacturing unit:

6.2.1 Changing in Planning Design

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

6.2.2 Improved Management and Monitoring Practices

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

6.2.3 Replacement/Relocation/Rehabilitation

The proposed project is located in open land where there is no sensitive area, human population or preserved natural resource is present which could be impacted due to

the commencement of the proposed project. No replacement, relocation and rehabilitation will be required for the commencement of the aforesaid project.

6.3 Impact Assessment Methodology

The impact assessment methodology for the installation of the dyed fabric manufacturing unit is given below:

6.3.1 Screening of Potential Impacts

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

6.3.2 Identification of Mitigation Measures

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

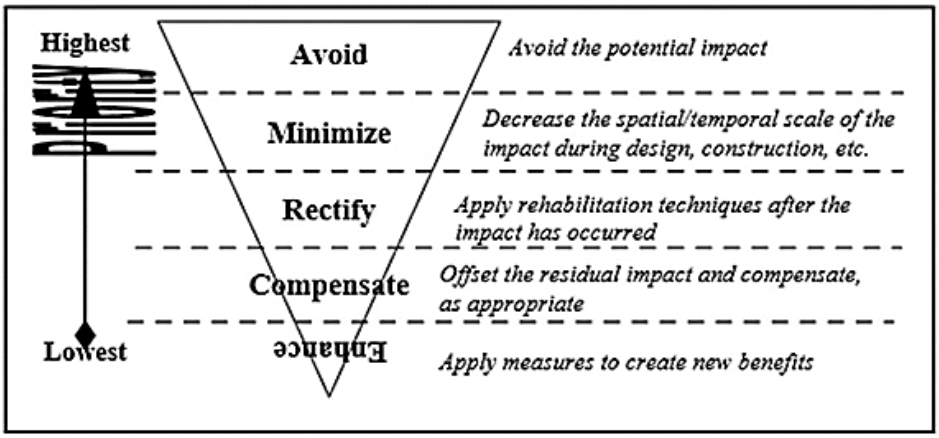

Figure 13: Impact Assessment Hierarchy

6.4 Impact Evaluation

Impact screening checklist and project impact evaluation matrix have been developed to evaluate the potential impacts of the establishment of dyed fabric manufacturing unit on the basis of set procedures as given in the environmental guidelines by Punjab EPA.

6.4.1 Methodology for Impact Evaluation

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

1. An Impact Screening Checklist

2. Project Impact Evaluation Matrix

Following is given a brief description of assessment tools:

a) Impact Screening Checklist

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

Table 12: Impact Screening Checklist

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

	Chemical Hazards		●	●		●			●		●		●	
	Physical Hazards		●	●			●		●			●		●
	Security Risks		●		●		●		●		●		●	

b) Project Impact Evaluation Matrix

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

Table 13: Impact Evaluation Matrix

Environmental Parameters	Impact Assessment during operational Phase
A: Physical	
Land Resources	
Soil Erosion and Contamination	0
Transportation	-1t
Solid Waste and By-Products	-2p
Land Use	NA
Air Resources	
Noise Pollution	-1t
Air Pollution	-2t
Dust Emissions	-1t
Water Resources	
Ground Water	-1p
Surface Water	NA
Wastewater	-2p
B: Ecological	
Flora	
Tree Cutting	+1p
Fauna	
Terrestrial Fauna	+1p
C: Socio-Economic	
Employment Opportunities	+3p
Land Value Appreciation	+2t
Availability of Local Raw-Material	+2p
Economic Uplift	+3p
D: Hazards	
Physical Hazards	-1p
Chemical Hazards	-1p
Health and Safety	-1p

Legends: 1= Low; 2= Medium; 3= High; 4= Extremely High; NA= Not Applicable; t= Temporary; p= Permanent; app= Applicable; 0= Negligible

6.5 Impacts Associated with Project Location

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

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

6.6 IMPACTS DURING OPERATIONAL STAGE

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

6.8.1 Impacts on Climate

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

Mitigation

Not required

6.8.2 Employment Generation

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

6.8.3 Air Quality

During the regular operational stage of the proposed project no emissions will be generated from process however some negligible emissions from machinery will be

produced to deal with that cyclones will be installed design and specifications are given in chapter-3.

Mitigation

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

Cyclone will also be installed at generator/machinery.

6.8.4 Noise

During the operational stage, noise will be generated only from the operations of machinery in the production hall but to the negligible level. No noisy process will be involved in the proposed project.

Mitigation

- Sound proof canopy and silencer will also be installed.
- Schedule of over hauling /maintenance of machinery will be developed.
- Extensive tree plantation along the boundary wall and at open places will also be done to act as sound barrier / sound absorber.

6.8.5 Water Consumption

During the operational stage of the proposed project water will be used for washrooms, kitchen and no water will be required in any of process related activities.

Mitigation

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

6.8.6 Wastewater Generation

During the regular operation of the proposed project wastewater will be produced from different sources as process, kitchen or washrooms, floor washing etc approximately 120 liters/day wastewater will be generated.

Mitigation

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

6.8.8 Solid Waste Generation

It is expected that certain quantum of solid waste, domestic in nature will be generated during the operation stage. Such waste will be collected separately once a day and disposed of in a suitable manner; hence no major impact is expected. The solid waste generated from the process i.e., fabric cuttings will be recycled; hence no major impact is expected.

Mitigation Measures

- For the collection of solid waste, receptacles will be provided at each floor and arrangements will be made to manage waste properly.
- Waste from such containers shall be collected separately daily.
- All the collection bins shall be properly maintained on regular bases.
- The recyclables i.e., fabric cuttings shall be stored separately and sold to furniture manufacturing vendors. These will be used in fillings of sofas and cushions etc.

6.8.9 Health and Safety of Workers

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

Mitigation

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

- ❖ No worker aged below 18 years or over 60 years shall be employed for any job involving physical handling of hazardous substances.
- ❖ All workers shall be thoroughly trained in safety precautions and shall be supervised by qualified supervisors.
- ❖ Protective clothing and equipment comprising helmet of cloth cap, safety spectacles of goggles, respirators or masks, rubber or plastic gloves and workboats shall be available for all workers.
- ❖ To avoid any kind of potential environmental hazards the worker would be trained properly so that they know the potential hazard of chemical.
- ❖ Proper cross ventilation shall be under taken to avoid from any bad smell/odor.

- There will be proper arrangement to handle accidental / disastrous situation.
- The instructions for the workers, safety signs and precautionary / preventive measures for the costumers / visitors would be displayed at the suitable / prominent places.
- Adequate supply of water shall be made available to the workers for their personal washing as well as for washing their protective equipment's.
- Protective clothing and equipment's of the workers shall be washed and cleaned as often as required to ensure their efficiency.
- No worker shall be permitted to eat, drink or smoke till he has removed his protective clothing and equipment, washed his hands and face and left the place of work.
- All firefighting, emergency and safety equipment's shall be frequently checked and properly maintained.
- First aid medical facilities equipped with required antidotes shall be available in the premises, supervised by trained staff.
- Medical checkup of all workers shall be carried out at the time of employment and at least once a year thereafter.

6.8.10 Emergency Response

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

Mitigation

- An Emergency Response Plan for earthquakes and manmade disasters will be prepared by the project management.
- Adequate supply of water shall be made available to the worker for personal washing as well as for washing their protective equipment's.
- All firefighting, emergency and Safety equipment's shall be frequently checked and properly maintained.
- Proper size and types of portable fire extinguishers will be kept near areas where flammable liquids are handled or stored.
- Adequate fire suppression system will be installed and properly functioning.

- The aesthetic conditions / outlook of the unit should be improved by tree plantation / ornamental plants and proper physical infrastructure.
- Proper disastrous and firefighting arrangements (fire extinguisher, fire hydrants, kits, instruments etc.) shall be ensured at many places of both sites.
- The internationally recognized health and safety standards will be adopted and the Emergency Response Plan will be developed and implemented in close consultation with the Fire Fighting Department.

6.9 POTENTIAL ENVIRONMENTAL ENHANCEMENT MEASURES

6.9.1 Tree Plantation

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

6.9.2 Facility Design

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

6.9.3 Social Enhancement Measures

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

a. Employment/Poverty Alleviation

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

the priority basis. In totality, the overall economic conditions of the area will be improved due to the establishment of the aforesaid project.

b. Local Economy

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

7. ENVIRONMENTAL MANAGEMENT AND MONITORING PLANS

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

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

7.1 Objectives

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

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

7.2 Management Approach

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

7.2.1 Proponent

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

7.2.2 Contractors

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

7.3 Components of EMMP

The EMMP consists of the following:

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

7.3.1 Remedial and Mitigation Measures

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

7.4 Environmental Management and Monitoring Framework

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

Table 14: Environmental Management Plan

Sr. No.	Project Activities	Potential Impacts	Mitigation Measures	Monitoring Measures	Frequency	Responsible Authority	Environmental Budget
Pre-Construction Phase							
1	**Site Selection for construction materials**	a) Temporary disturbance due to increased traffic b) It may involve tree cutting for placement of construction materials, asphalt, and batching plant site. c) Land acquired for construction material that may cause blockage of roads	a) Provision of sign boards and alternative routes b) Batching and crushing plants will be installed in the downwind direction of residential areas	a) Cutting of Trees will be monitored. b) The proponent is the owner of land	--	Proponent, Contractor	50,000/-

2	**Handling of construction material**	a) Construction material such as sand, cement may pose health risks. b) Emissions and runoff of cement-contaminated water from batching plant may pollute the nearby area. c) Scattered construction material may obstruct mobility	a) Material will be appropriately covered to prevent dispersal of sand material. b) Implement dust suppression measures for all stockpiles. c) Protective health & safety measures will be adopted. d) Concrete mixing on the ground will not be allowed. e) Emissions from batching plant should be properly controlled and runoff contaminated water will be collected, stored and disposed of at the designated site. f) Material will be kept aside in designated place without creating	a) Proper covering of construction material will be checked on regular basis b) Wastewater runoff from the construction site to nearby water bodies will be monitored	Weekly	Construction contractor	

			disturbance to public mobility				
3	**Identification site for Labour Camps/ site offices**	a) Generation of solid waste may pose health issues. b) Sanitary problems may arise due to bathing and washing of clothes by labours.	a) Proper site will be selected without disturbing environment and to avoid conflict with locals. b) Dustbins should be provided at project site. c) Involvement of local authorities at project level will be ensured. d) Designated staff will be hired at project site to collect SW at consecutive/ regular intervals. e) Identification of disposal site for	Surface water quality of local water bodies will be monitored by examining its various parameters such as pH, DO, TSS, TDS, COD, BOD5, Alkalinity and Turbidity etc by assigned laboratory	--	Consultant	

			SW with due involvement of local community f) Ensure the provision of toilets for labours and septic tank for its deposal. Further, site engineer and the project environmentalist will identify the location of wastewater discharges. g) Strict instruction will be issued to avoid wastewater discharge into freshwater bodies/lakes. h) Capacity building of labors at the site to follow the moral ethics				
4	**Movement of heavy machinery**	a) May cause disturbance to infrastructure such as roads, nearby residences etc. b) May cause noise pollution harmful for nearby	a) Noise Monitoring and Mitigation Plan to Limit noisy activities. b) Avoid using heavy equipment	a) Noise level of the proposed project site will be monitored	--	Consultant	

		residents and labors					
5	**Excavation of Earth**	a) Change of soil characteristics b) Loss of fertile top layer of soil c) Air quality may also deteriorate d) Generated stockpiles may be a nuisance e) Vibrations may arise due to machinery	a) Water sprinkling must be ensured at regular intervals to avoid dust pollution b) Minimal effort should be taken to disturb topsoil cover. c) Cover construction materials and stockpiled soils if they are a source of fugitive dust. d) Site should be selected for proper disposal of stockpiles to avoid any disturbance in mobility e) Contractor needs to obtain approval for excavation and for plan of rehabilitating the site after excavation. f) Locations must be identified for transportation or to be reused or dumped	a) Ambient air quality will be monitored by examining its various parameters such as CO, NO, NO2, NOX, SOX, H2S etc b) Soil quality will be monitored by examining its various parameters such as soil type, soil erosion, soil Colour, soil characteristics, pH, porosity, electrical conductivity, permeability	--	Consultant	

			of excavated material g) Minimize the amount of land to be disturbed and vegetation to be removed. h) Restore or apply protective covering on disturbed soils as quickly as possible				
6	**Public Privacy and Cultural Properties**	a) Disturbance to people visiting public properties i.e., mosque, schools, shrines, and graveyards b) Privacy issues due to labour camping	a) There is no cultural heritage and public institutions in the proposed project area to be disturbed b) Capacity building of labours at the site to follow the moral ethics.				
Construction Phase							
1	**Land clearing, (Leveling, tree cutting, drainage, etc.) and other off-site sources of materials**	a) Loss of vegetation may occur b) Soil contamination from spills and fuel leaks c) Disposal of cleared debris	a) Clear small areas for active work at a time and minimize the impact on flora at the site. Also, Photographical, and botanical inventory of vegetation will be	a) Surface water quality of local water bodies will be monitored by examining its various parameters such as pH, DO, TSS, TDS, EC, COD, BOD5,	--	Construction Manager	Air Monitoring: 50,000/- Water Quality Monitoring: 40,000/-

		d) Soil compaction, sediment production, soil erosion and un-stability of the soil e) Noise and vibration would affect wildlife and property of locals f) Disruption and dislocation of migratory birds g) Spread of invasive species or loss of indigenous species, ecosystem loss and loss of habitat forever	prepared before clearing the site. b) Clear without destroying large plants and turf where possible and preserve them for replanting in temporary nurseries. c) Assure minimum disturbance to native flora during construction especially where the asphalt, batching and crushing plants will be installed. Also, Re-vegetate area with recovered plants and other appropriate local flora	Alkalinity and Turbidity etc. b) Soil quality will be monitored by examining its various parameters			
2	**Handling/ transportation of construction materials**	Soil contamination, toxicity and air pollution are the major impacts which may arise due to mishandling of construction materials.	a) Prevent dumping as it may be hazardous or proper labelling of containers, including the identification and quantity of the contents, hazard	Regular Visual Inspection		Construction Manager	Noise Monitoring: 10,000/-

			contact information etc. b) Emergency response plan must be prepared to address the accidental spillage of fuels and construction materials. c) Ensure the training of workers in waste management handling procedure.				
3	**Handling of solid waste**	a) Solid waste may be generated from: i. the active construction sites and, ii. the camp sites b) Solid waste may pose health issues or disturb scenic beauty of the site c) Ban On-site debris burning. d) Heaps of solid waste may cause	a) Proper storage and site practices to minimize the potential of damage or contamination of construction material. b) Scattered solid waste should be properly managed in order to avoid contamination and provision of enclosed bins for	a) Solid waste generated by the local community should be disposed off properly in dustbins and must be collected on regular basis b) Perform routine site inspection	Bi-Monthly	Regular collection of solid waste will be ensured and checked by Contractor & Environmental Specialist	50,000/-

		disturbance in mobility	general refuse at project site; c) Involvement of local authorities d) Capacity building of site personnel in waste management procedures;				
	Equipment Maintenance	Noise Pollution Soil Contamination	a) Prepare and keep the record of equipment maintenance log. b) Prepare proper maintenance sheets for vehicles. c) Use fully tuned vehicles and machinery.		Regular Inspection	Contractor	
4	**Health & Safety of Workers at active construction and camp site**	a) Health problems or immediate risk may emerge at construction site: b) Dust particles c) Air and Noise pollution d) Accidental risks	Providing basic medical training & medical service (First Aid Boxes) to workers. b) Personal Protection equipment PPE's (earmuffs) will be provided to the workers operating in the vicinity of high noise generating machines.	a) Provision of PPEs will be ensured	Weekly	Proponent	Health & Safety: 1,00,000/- Workers Training: 1,50,000/-

			c) Provision of proper safety signage at sensitive/accident-prone spots. d) Ensure strict use of wearing these protective clothing during work activities. e) Provision of adequate sanitation, washing & cooking facilities including lighting up to satisfaction;				
5	**Tree Plantation Plan**	a) Clearing of vegetation and cutting of tree cover from the site due to construction of unit may have adverse environmental impacts on bio-physical environment	Tree plantation practices will be introduced in case of removal/cutting.	Re-plantation of native floral species will be ensured.	--	Proponent	0.1 million

Category	Impact	Project Activity	Monitoring Mechanism	Frequency	Monitoring Agency
Operational Phases					

Land Resource	Solid Waste and By-Products	Implementation of SW* Management System	Record keeping and timely transfer of SW from bins to the disposal site for ultimate management and disposal. Selling of the scrap dust to the small refineries	Weekly and annually	Proponent
	Soil Contamination	Implementation of Management Plans	Visual monitoring and regular site inspection	Daily and annually	Project Manager
Air Resource	Air Emission	Air quality will deteriorate due to transportation related activities	Monitor the emissions as per PEQ standards	Once before start of operation and after that as when required during operational phase	EA**
Ecological Resource	Flora	Uprooting of trees during Construction phase and maintenance of photographic record	Re-vegetation during operation phase	During Baseline Survey, once in a year and after the completion of the Project	Project Manager
Wastewater		Wastewater will be generated mainly from	Installation of the WWTP, septic tanks and regular testing of	On the monthly basis	Project Manager

	domestic use and process activities	the effluents that are being discharged		
**SW= Solid Waste, **EA= Executive Agency*				

7.4.1 Institutional Arrangements and Responsibilities

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

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

a) Roles and Responsibilities

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

Table 15: Roles and Responsibilities

Roles and Responsibilities		
Sr#	**Concerned Persons**	**Duties**
1	The Project Manager	**Following will be the responsibilities of the Project Manager** • **Ensure that the contractor is aware of all specifications, legal constraints, standards and procedures pertaining to the project specifically with regards to environment.** • **Ensure that all stipulations within the EMMP are communicated and adhered to by contractor(s)** • **Monitor the implementation of the EMMP throughout the project by means of site inspections and meetings. This will be documented as part of the minutes of the site meeting documents** • **Ensuring project execution within defined budget and timelines** • **Conducting regular check of the project status and meetings with project team** • **Provide support and guidance to project team as and when needed** • **Project Manager is expected to continually monitor and improve the overall performance of their operation**
2	HSE Manager	**In addition to the health and safety responsibilities held by staff, managers and supervisors must do whatever is reasonably practical to ensure that both the workplace and the work itself are safe. This includes:** • **Ensuring that staff are appropriately trained and supervised** • **Identifying, assessing and managing health and safety risks**

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

7.4.2 Proposed Monitoring Program to Assess Performance or Output of EMP

The following environmental issues are considered to warrant specific management actions for the implementation of project. These issues have specific regulatory

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

Table 7: Environmental Monitoring and Management Plan

Environmental Quality	Parameters	Details of Location	Standards/Guidelines	Frequency	Responsibility
CONSTRUCTION PHASE					
Waste Collection, Storage and Disposal	Inspection of Waste Generation, collection, Storage and Disposal at site	Construction Site	Statutory Requirements	Once a week	Environmental officer/manager
Workers safety	Injuries and accidents	Recording injuries	-	Onsite	HSE/contractor
Air Quality	Air Quality (PM_{10}) All relevant stack emissions (CO, NO_X, SO_X Smoke)	Active Construction Area	PEQS	Once a month	Environment Officer /manager
Water Quality	Groundwater Quality (Total Coliform, Fecal E.Coli, Total Colonial Count, pH, TDS, Total hardness, Alkalinity Nitrates, Chloride, Sodium, iron)	Groundwater sources near the project site	PEQS	Once a month	Environment Officer /manager

Noise Level	Noise level on dB (A) Scale	At least three locations near boundary	PEQS	At least 3 working days	Environment Officer /manager
OPERATIONAL PHASE					
Ambient Air Quality	NO_X, SO_X,	Stack of generator	PEQS	Quarterly	Environment Officer /manager
Noise Level	Noise level on dB (A) Scale	Noise level near the receptor	PEQS	Quarterly	Environment Officer /manager
Waste disposal, procedure for waste collection, storage, and disposal	Inspection of waste generation, collection, storage, and disposal will be undertaken at each site of the project activity	Visual inspection	Statutory Requirements	Once daily	Administration Officer
Safety	Injuries	Injuries will be recorded		Daily	Administrator

7.5 Proposed EMP Reporting and Reviewing Procedures

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

7.5.1 Meetings

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

7.5.2 Changes-Record Register

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

7.6 Impacts and their Mitigation Summary

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

Table 17: Impacts Summary of dyed fabric manufacturing unit processing

Environmental Parameters	Impact Assessment during operational Phase
	Operational
A: Physical	
Land Resources	
Soil Erosion and Contamination	0
Transportation	-1t
Solid Waste and By-Products	-2p
Land Use	NA
Air Resources	
Noise Pollution	-1t
Air Pollution	-1t
Dust Emissions	-1t
Water Resources	
Ground Water	-1p
Surface Water	NA
Wastewater	-2p

B : Ecological	
Flora	
Tree Cutting	+1p
Fauna	
Terrestrial Fauna	+1p
C: Socio-Economic	
Employment Opportunities	+3p
Land Value Appreciation	+2t
Availability of Local Raw-Material	+2p
Economic Uplift	+3p
D: Hazards	
Physical Hazards	-1p
Chemical Hazards	-1p
Health and Safety	-1p
Legends: 1= Low; 2= Medium; 3= High; 4= Extremely High; NA= Not Applicable; t= Temporary; p= Permanent; app= Applicable; 0= Negligible	

7.7 Equipment Maintenance Details

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

7.8 Environmental Budget

The environmental budget for the project is PKR 20 lacs which will be used for the control of the air pollution by the installation of dust collection system, tree plantation at various designated sites, EMMP for the operational phase and monitoring of environmental parameters (such as ambient air, noise and wastewater). The total cost of the project is PKR 434.8 million. EMMP and the monitoring will be carried out on the regular basis. So, more than 1% of the total project cost will be allocated for the environmental protection. Cost Breakup is given in front of each entity in table 15: Environmental Monitoring and Management Plan.

Table 18: Schedule for Implementation of Environmental Budget

Schedule for Implementation of Environmental Budget			
Construction & Operational Phase			
Parameter	**Frequency**	**Schedule for Implementation**	**Responsibility**
Air Quality	Quarterly	Ambient air quality and Scrubber Maintenance	Administration of project and Reporting to EPA
Noise	Quarterly	Noise by activities in the multi-purpose building	Administration
Surface and ground water	Bi-Annually	Monitoring of water and wastewater parameters defined by EPA	Administration and Reporting to EPA
Solid waste	Quarterly	Waste generation	Administration of the project

8. CONCLUSION AND RECOMMENDATIONS

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

8.1 Merits and Demerits

The major positive impacts include;

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

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

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

they are still negligible. There are certain mitigations suggested to cater for the aforesaid issues.

8.2 Recommendations

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

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

GLOSSARY

Aesthetic	Concerned with beauty or appreciation of beauty.
Agency	A business or organization providing a particular service on behalf of another business, person, or group.
Cephalosporin's	The cephalosporin's are a class of β-lactam antibiotics originally derived from the fungus Acremonium
Climate	The weather conditions prevailing in an area in general or over a long period.
Consultant	A person who provides professional advice or services to companies for fee.
Construction Waste	Waste generated from the buildings and construction industry and includes material like bricks, concrete, tiles, debris, ceramics and more.
Convention	An agreement between states covering particular matters, especially one less formal than a treaty.
Demographic	A single vital or social statistic of a human population, as the number of births or deaths.
Ecology	The branch of biology that deals with the relations of organisms to one another and to their physical surroundings.
Endangered species	A species of animal or plant that is seriously at risk of extinction.
Environment	Relationship of natural world (human beings, animals and plants) with physical surroundings (air, land, water).
Excavation	Excavation is the act or process of digging, especially when something specifics being removed from the ground. Archaeologists use excavation to find artifacts and fossils.
Framework	A framework is a real or conceptual structure intended to serve as a support or guide for the building of something that expands the structure into something useful.
Hazardous Waste	Hazardous Waste is waste that poses substantial or potential threats to public health or environment.

Municipal Waste	Municipal Solid Waste (MSW)—more commonly known as trash or garbage—consists of everyday items we use and then throw away, such as product packaging, grass clippings, furniture, clothing, bottles, food scraps, newspapers, appliances, paint, and batteries. This comes from our homes, schools, hospitals, and businesses.
Nature	The phenomena of the physical world collectively, including plants, animals, the landscape, and other features and products of the earth, as opposed to humans or human creations.
Preservation	Preservation is the strict setting aside of natural resources to prevent the use or contact by humans or by human intervention. In terms of policy making this often means setting aside areas as nature reserves (otherwise known as wildlife reserves), parks, or other conservation areas.
Proponent	A person who advocates a theory, proposal, or course of action.
Rehabilitation	To restore to a condition of good health, ability to work, or the like.
Resettlement	The settlement of people in a different place.
Resource	A stock or supply of money, materials, staff, and other assets that can be drawn on by a person or organization in order to function effectively.
Sanitation	Conditions relating to public health, especially the provision of clean drinking water and adequate sewage disposal.
Stakeholder	A stakeholder is a party that has an interest in a company and can either affect or be affected by the business. The primary stakeholders in a typical corporation are its investors, employees and customers.
Topography	Topography is the study of the shape and features of the surface of the Earth and other observable astronomical objects including planets, moons, and asteroids.
Vaccines	A substance used to stimulate the production of antibodies and provide immunity against one or several diseases, prepared from the

	causative agent of a disease, its products, or a synthetic substitute, treated to act as an antigen without inducing the disease
Vegetation	Plants considered collectively, especially those found in a particular area or habitat.

LIST OF ABBREVATIONS

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

NEQS	National Environmental Quality Standards
NEP	National Environmental Policy
NO2	Nitrogen Dioxide
NOC	No Objection Certificate
OH & S	Occupational Health and Safety
PAPs	Project Affected Persons
PEPA	Pakistan Environmental Protection Act
PEPC	Pakistan Environmental Protection Council
PEQS	Punjab Environmental Quality Standards
PM	Particulate Matter
SO2	Sulfur Dioxide
SOP	Standard Operating Procedures
SWM	Solid Waste Management
TA	Technical Assistance
TORs	Terms of Reference
TSS	Total Suspended Solids
UNDP	United Nation Development Pro
WASA	Water and Sanitation Agency

LIST OF PEOPLE CONSULTED AND THEIR VIEWS

Sr No.	Interviewer's Name	Contact
1.	MUHAMMAD IRFAN	34101-8754734-1
2.	AHMAD	34101-7035024-1
3.	BABAR BUTT	34601-3184932-1
4.	AZAM JAVED	34101-3118065-9
5.	MUHAMMAD IDREES	34101-2626672-1
6.	AHSAN IQBAL	34101-7304213-5
7.	MUHAMMAD DILAWAR	31201-7314614-9
8.	UMAR FAROOQ	14201-9275846-5
9.	HAMMAD WAHEED	36302-4205109-3
10.	JAMSHAID YOUSAF	34101-7683748-9
11.	MUHAMMAD JUNAID	34101-3402766-3
12.	MUZAMMAL AMIN	34101-2240239-9
13.	MUZAMMIL AKBAR	34101-8171975-5
14.	ISHTIAQ RASHEED	34101-6266509-9
15.	MUHAMMAD NOUMAN KHAN	34101-9621287-7
16.	MUHAMMAD SUFYAN	34101-0775011-5
17.	IFTIKHAR ALI	35404-7212533-9
18.	MUHAMMAD KHALID MAHMOOD	34101-1992191-3
19.	CH. MUHAMMAD YOUSAF	35401-6595576-7
20.	ZAKA ULLAH	34104-2235142-7

The survey in the study area following concerns of the local community were noted:

- Wastewater should be properly treated prior to final disposal in nearby drain.
- Solid waste should be managed effectively by adopting the standard practices of the area.
- Cleanliness of the area should be ensured.
- An effective EMMP should be designed and enforced with true spirit.
- Health of the workers should be ensured.
- Plantation should be carried out at extensive scale.
- Construction activity should be carried out during day hours.
- Noisy activities should be confined.
- Workers should be hired from local community.
- PPE's must be provided to workers
- Indigenous trees around the facility should be planted to control air pollution.
- Safeeda can be planted in the project area as the area in known to be affected by the logging and salinity.

21.	ZEESHAN MUJAHID	34101-4175822-3	▪ Removal of shrubs and bushes should be avoided to the extent possible.
22.	ALI RAZA	34101-1054833-1	
23.	SUFIAN AHMAD	34101-7432307-9	
24.	MUBASHAR KHALID	34101-2733211-5	
25.	FALAK SHER	34101-5490755-3	

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- Field Surveys
- Public Consultations

TERMS OF REFERENCE (TORS)

The consultants are required to carry out an Initial Environmental Examination study of the project under Section-12 of Pakistan Environmental Protection Act 1997/ Punjab Environmental Protection (Amendment) Act 2012.

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

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

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

Mohammad Jameel Chawla
(C.E.O)
Chawla Enterprises

PROJECT TEAM AND RESPONSIBILITIES

Name of expert	Position held	Highest Qualification	TERM OF REFERENCES
Arslan Iqbal	Environmentalist-2	MPhil Environmental Sciences, UOL	Mr. Arslan would be responsible for: ❖ Biodiversity assessment ❖ Detailed flora fauna survey of project sites ❖ Identification of threaten and endangered species ❖ Project impacts on flora and fauna ❖ Detailed social survey of project sites ❖ Social impact assessment ❖ Consultation with stakeholders
Amna Hafeez	Environmentalist-3	M.Sc Mountain Conservation and Watershed Management, University of the Punjab	Ms. Amna would be responsible for: ❖ Report writing ❖ Field surveys and consultation with stakeholders ❖ Preparation of Environment monitoring plan ❖ Preparation of technical EMP ❖ Identification of sensitive receptors ❖ Capacity building & training ❖ Conducting and monitoring of health assessment surveys ❖ Environment health risk assessment and management ❖ Detailed survey of project sites ❖ Environmental Assessment ❖ Social Assessment

Huda Ashfaq	Environmentalist-4	M.Phil Environmental Science, University of Veterinary and Animal Sciences, Lahore.	Ms. Huda would be responsible for: ❖ Detailed flora and fauna survey of project sites ❖ Site Monitoring ❖ Socio-Economic survey & analysis ❖ Report Writing