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## 1 EXECUTIVE SUMMARY

This executive summary represents the finding of Environment impact assessment (EIA) of M/S Ultimate Medical Care Pvt Ltd at Plot No. 126-B Quaid-e-Azam Business Park, Sheikhpura. The main objectives of this project will be manufacturing of medical equipment's, syringes in an environment friendly and scientific method.

### 1.1 TITLE & LOCATION OF PROJECT

M/S Ultimate Medical Care Pvt Ltd at Plot No. 126-B Quaid-e-Azam Business Park, Sheikhpura.

### 1.2 NAME OF PROPONENT

Muhammad Zeeshan Waraich S/o Muhammad Sharif Waraich  
House No. 23, One Kanal Villas, Bahria Orchard, Sheikhpura Punjab Pakistan.  
CNIC NO. 36603-890971-9

### 1.3 NAME OF ORGANIZATION PREPARING THE REPORT

M/S Ultimate Medical Care Pvt Ltd has engaged Environtech Consultants (Private) Limited at office no. 11, Second Floor, Centre Point Plaza, Main Boulevard, Gulberg-III, Sheikhpura.  
Contact no. +92-302-4342302  
Email: info@environtech.com.pk

**Table 1: Salient features of project**

1.	<b>Project Title</b>	M/S Ultimate Medical Care Pvt Ltd
2.	<b>Project Location</b>	Plot No. 126-B Quaid-e-Azam Business Park, Sheikhpura.
3.	<b>Proponent</b>	Muhammad Zeeshan Waraich S/o Muhammad Sharif Waraich CNIC No.: 36603-890971-9 <b>R/o House No. 23, One Kanal Villas, Bahria Orchard, Sheikhpura Punjab Pakistan.</b>
4.	<b>Nature of project</b>	Medical Devices Manufacturing Unit IV drip Solutions, Syringes & Infusion Sets
5.	<b>Total area of project</b>	2 acres
6.	<b>Proposed covered area</b>	53603 SFT

7.	<b>Total open area</b>	45959 SFT
8.	<b>Location of project with GPS coordinates</b>	31°44'21.1"N 74°03'10.5"E
9.	<b>Status of area</b>	Industrial
10.	<b>Present status of land Use</b>	Vacant Plot/open Plot
11.	<b>Land use in the surroundings of project site.</b>	The surroundings are: North: Road South: Open plot East: Open Plot West: Open Plot
12.	<b>Raw material</b>	Polypropylene, Acrylonitole Butadienstyrene, Polyrinyl Chloride, Dextrose, Sodium Chloride, Metronidazole & Ringer Lactate
13.	<b>Product</b>	IV Drip Solutions, 3ml syringes, 5ml syringes, 10ml syringes and infusion set
14.	<b>Capacity of project</b>	IV Drips Daily Production 180,000 units (Monthly Production 4,500,000 units) 200,000 per/day of every type of syringe (200,000 3ml, 200,000 5ml, 200,000 10ml) Infusion sets 125,000 per day
15.	<b>Total capacity of project</b>	1105,000 units per day
16.	<b>Project cost</b>	Pkr 100 million
17.	<b>Type of waste</b>	The solid waste will be generated during daily activities. No hazardous waste will be generated.
18.	<b>Quantity of waste</b>	05-10 Kg of MSW will be produced annually.
19.	<b>Description of proposed project</b>	The proposed project is the establishment of manufacturing of IV Drip Solutions, IV infusion sets & disposable syringes manufacturing unit. Injection blow molding machinery will be installed for production of plastic syringes whereas needles will be purchased.

20.	<b>Nearby emergency services i.e. Hospital, police station, rescue, fire brigade etc.</b>	Akhtar Memorial Hospital, Police Station Housing Colony, Rescue 1122 Central Station
21.	<b>Current status of project</b>	Open land
22.	<b>Source of electricity</b>	LESCO

#### 1.4 A BRIEF OUTLINE OF PROPOSAL (TYPE, PROCESS, TECHNOLOGY AND LAND REQUIREMENTS)

As per Punjab Environmental Protection Act 1997 (amended 2012) and Initial Environmental Examination (IEE) & Environmental Impact Assessment (EIA) Regulations, 2000 proposed project falls under Category B (1) **“Manufacturing & Processing”** mentioned in Schedule-II.

The current project is about establishment disposable syringes. Site selected for proposed project is under the ownership of proponent. The estimated project cost is **PKR 100 million approx..**, and capacity of project will 905,000 units per day. The project under consideration of this EIA is the establishment of disposable syringes manufacturing unit at is Plot No. 126-B Quaid-e-Azam Business Park, Sheikhpura. Beyond this scope no other development activities have been covered under this EIA study.

#### 1.5 THE MAJOR IMPACTS & RECOMMENDATIONS FOR MITIGATION MEASURES

The potential impacts associated with the proposed project construction and operation activities

Included: increase in water consumption; surface water contamination, air pollution from vehicle; vehicle movement, noise and disturbance, soil contamination and waste generation. Proposed installations are automated machineries to be laid on concrete fortifications. The machinery installation does not require water while only water use will be during washing and domestic activities. Water conservation practices will be utilized to reduce the overall water consumption during proposed project activities. Surface or groundwater quality may deteriorate if pollutants are mixed with surface runoff during rain and carried to water resources in the vicinity or seeped in the ground. The impermeable septic tank will prevent untreated sewage from polluting surface water.

The ambient air quality of the area can be affected by exhaust emissions, vehicles and combustion process in construction equipment. The pollutants can seriously impair human health and ecological environment and other materials. The emissions include sulphur

dioxide, oxides of nitrogen, carbon monoxide, carbon dioxide, and particulates. The emission levels depend on the type and size of activity, the type and quality of fuel and the manner in which it is burned. A significant impact will be interpreted if the concentration of pollutants in the ambient air exceeds the PEQS or recognized international guidelines for ambient air quality.

The sources of emissions during construction activities will not be significantly enough to alter the ambient air quality at regional level. All vehicles, equipment and machinery will be properly tuned and maintained to minimize emissions. Cleaner fuels if required (less 1% Sulphur content) will be preferred to procure. Monitoring of Ambient air parameters and emissions should be carried out on to ensure compliance with the PEQS.

Noise has the potential to cause an impact to nearby communities and working personnel. To avoid the impact of noise, it will be ensured that, vehicles and other potentially noisy equipment used are in good condition. The noise level monitoring results would be compared with Punjab Environmental Quality Standards (PEQS) for Noise to meet the permissible limits. All on-site personnel will use required personal protective equipment (PPE) in high noise areas that will be clearly marked.

All the waste generated during construction & installation activities will be disposed-off through implementation of an effective waste management plan to ensure that any impact resulting from waste generation shall be minimal. The recyclable waste will be sold to waste contractors, as per waste management plan. No hazardous chemical will be uncontrollably discharged into the Environment.

Table 2: Impacts and mitigation measures

Environmental Aspect	Potential Impacts	Mitigation Measures
Water Resources	Depletion in groundwater, contamination of water resources by surface runoff, spillage of fuel	<ul style="list-style-type: none"> <li>▪ Water extraction will be kept at minimum and water conservation measures will be practiced.</li> <li>▪ Sewerage Wastewater from project site will be directed to settling tanks.</li> <li>▪ Fuels and lubricants will be stored in covered and with bund walls, underlain with impervious lining.</li> <li>▪ Spill prevention plan shall be followed to mitigate any kind of spill.</li> </ul>
Air Quality	Dust, combustion emissions, vehicular emissions used for project- related activities.	<ul style="list-style-type: none"> <li>▪ Water will be sprinkled daily on all exposed surfaces to suppress emission of dust.</li> <li>▪ Regular maintenance of project vehicles and equipment to ensure that engines are in sound working condition to minimize air emissions.</li> <li>▪ Use of cleaner fuels for combustion</li> <li>▪ Ambient monitoring should be carried out to ensure compliance with the PEQS.</li> </ul>
Noise	Disturbance to the site workers, Nuisance for surrounding communities and wildlife	<ul style="list-style-type: none"> <li>▪ Proper maintenance of vehicles and potentially noisy equipment.</li> <li>▪ Minimize/avoid unnecessary use of noisy machinery.</li> <li>▪ Blowing of horn will be prohibited.</li> <li>▪ Provision of Personal Protective Equipment (PPE) to the on-site personnel in high noise areas.</li> </ul>

Solid Waste	Soil contamination, air pollution, odor, health hazards, aesthetic issues	<ul style="list-style-type: none"> <li>▪ Proper testing and in compliance with standards before disposal.</li> <li>▪ Leftover raw material will be again used in production process.</li> </ul>
Environmental Aspect	Potential Impacts	Mitigation Measures
		<ul style="list-style-type: none"> <li>▪ Records of all waste generated during the project activity period will be maintained. Quantities of waste disposed, recycled, or reused will be logged on a waste tracking register.</li> <li>▪ Training will be provided to personnel for identification, segregation, and management of waste.</li> <li>▪ No waste will be dumped openly at any location.</li> </ul>
Worker's Health and Safety	Health problems or immediate risk may take place, Occupational health of workers and community may be affected.	<ul style="list-style-type: none"> <li>▪ Compliance to emergency response plan for emergencies and accidents will be ensured to avoid health safety risks.</li> <li>▪ Work safety measures and good workmanship practices are to be followed by the contractor to ensure no health risks for laborers.</li> <li>▪ Protection devices ( earmuffs) will be provided to the workers operating in the vicinity of high noise generating machines.</li> <li>▪ Proper maintenance of facilities for workers will be monitored.</li> <li>▪ Provision of protective clothing for laborers e.g. helmet, adequate footwear, protective goggles, gloves</li> <li>▪ Ensure strict use of wearing PPE during work activities.</li> <li>▪ Provision of proper safety signage at sensitive/accident prone spots.</li> </ul>

## 1.6 PROPOSED MONITORING

To monitor actual impacts of the project on selected sensitive receptors so that impacts not anticipated in the EIA or impacts which exceed the levels anticipated in the EIA can be identified and appropriate mitigation measures can be adopted in time. This objective will be achieved through effects monitoring.

Considering the environmental conditions of the project area and the assessment of potential impacts of the project made in the EIA, the following environmental parameters will be monitored at identified locations.

**Air Quality Monitoring** – Air quality monitoring will be done during the construction and operation phase of the project at the representative locations. Ambient air quality parameters will include NO<sub>x</sub>, SO<sub>x</sub>, CO and PM<sub>10</sub>,

**Water Quality Monitoring** – Ground and surface water quality monitoring will be done during the construction and operation phase of the project at the representative locations.

**Groundwater Quality Parameters:** Total Coliforms, Total Colonial Count, E-Coli, pH, TDS, Total Hardness, Nitrate, Chloride, Fluoride, Colour, Manganese, Aluminium, Chromium, Cadmium, Boron, Barium, Antimony, Arsenic, Cyanide, Mercury, Nickel.

**Wastewater Quality Parameters:** pH, DO, TSS, Alkalinity, BOD<sub>5</sub>, COD, Turbidity.

**Noise Monitoring** - The monitoring will be carried out at key locations covering all receptors.

## 1.7 CONCLUSION

The study was carried out to assess the environmental issues of the establishment of above mentioned proposed project. All the relevant environmental impacts of the study have been identified based on the field survey and accordingly their mitigation measures were proposed in the report. The EIA was carried out keeping in view the Punjab Environmental Protection Act 1997 (amended-2012). In the light of the facts obtained from the project baseline study and control measures, it is envisaged that establishment of proposed unit will be useful for environment and has no adverse social and environmental impacts. The nearby residence communities have no issue with the installation of the project rather it is highly supported project because of present waste management condition, human health and disease risks in area.

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## **INTRODUCTION**

---

This chapter of the report provides a brief description of nature, size and location of the project. A defined scope of study, the magnitude of efforts and concise description of project proponent is also included in this chapter. The project is being proposed with the objectives to manufacture disposable syringes. Project proponent aims to deliver sustainable, industry leading financial performance and earn trust through enhancing quality of life and contributing to a healthier future.

The study has been carried out to estimate the potential environmental impacts, both positive and negative, on the environment as well as socio-economic fabric of the surrounding environment during construction as well as operational phase. This report intends to provide satisfactory mitigation measures to avoid/eliminate any chance of adverse environmental impact on the socio-cultural, economic and environmental components. This report also intends to fulfill the regulatory requirements set under Punjab Environmental Protection Act, 1997 (Amended 2012) and its consequent legislative framework for IEE/EIA Regulations 2000 and the guidelines drafted for IEE and EIA under numerous sectorial heads. The entire set of legislative framework requires any new development project to undergo an IEE or EIA based on the categorization of the project under Schedule I and/or Schedule II.

### **1.8 PURPOSE OF REPORT**

As per Punjab Environmental Protection Act, 1997 (Amended 2012) and the IEE/EIA Regulations, 2000 it is mandatory for the proponent of any development project to obtain Environmental Approval before commencing construction from EPA Punjab by filing an IEE or EIA as the case may be before the Agency. This EIA Study presents the findings of this proposed unit. For this purpose, the proponent has engaged environmental consultants, M/s Environtech Consultants (Private) Limited. The purpose of this study is to identify the environmental baseline i.e. physical, biological and socio- economic/cultural conditions and assess all possible impacts arising during the construction and operation phase of the project with the aim to find out appropriate measures for their mitigation, to either eliminate those impacts or to bring them to acceptable level and formulate Environmental Management and Monitoring Plan (EMMP) for implementation of the project in environment-friendly manner. This EIA Report provides relevant information, as required under the officially approved format, to facilitate the decision makers i.e. EPA Punjab for the issuance of Environmental Approval/NOC.

## 1.9 IDENTIFICATION OF PROJECT AND PROPONENT

### 1.9.1 IDENTIFICATION OF PROJECT

The proposed project to which this Environmental Impact Assessment (EIA) relates is entitled as “M/S Ultimate Medical Care Pvt Ltd at Plot No. 126-B Quaid-e-Azam Business Park, Sheikhpura.

### 1.9.2 IDENTIFICATION OF PROJECT PROPONENT

**Table 3: Identification of project proponent**

Project proponent	Address	CNIC No.	Contact No.
Muhammad Zeeshan Waraich S/o Muhammad Sharif Waraich	House No. 23, One Kanal Villas, Bahria Orchard, Sheikhpura Punjab Pakistan.	36603-890971-9	03218424300

### 1.10 DETAILS OF CONSULTANT

The EIA study was carried out by team of Environtech Consultant Private Limited comprising of environment scientists and engineers, sociologist, environmental chemist and environmental auditors with diversified experience on local and international assignments. The detail of the project team deputed on this assignment is attached to this report.

### 1.11 BRIEF DESCRIPTION OF NATURE, SIZE AND LOCATION OF PROJECT

As per Punjab Environmental Protection Act 1997 (amended 2012) and Initial Environmental Examination (IEE) & Environmental Impact Assessment (EIA) Regulations, 2000 proposed project falls under Category B “Manufacturing & Processing” mentioned in Schedule-II. The current project is about establishment of Disposable Syringes Manufacturing Unit. The project under consideration of this EIA is the establishment of Disposable Syringes Manufacturing Unit at Plot No. 126-B Quaid-e-Azam Business Park, Sheikhpura. Beyond this scope no other development activities have been covered under this EIA study.

### 1.12 PROJECT NEED

The proposed project intends to manufacture disposable syringes. Moreover, the proposed project will meet growing demand of disposable syringes of market.

## 2 SCREENING

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According to the Section 12 of Punjab Environmental Protection Act, 1997 (amended 2012) which 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 (IEE) and has obtained from the Government Agency approval in respect thereof.”

According to Review of IEE and EIA Regulations, 2000; the proposed project falls under Category B “**Manufacturing & Processing**” mentioned in Schedule-II.

Thus, an EIA Report is being prepared for duly submission in EPA, Punjab.

### 2.1 EIA PROCESS

#### 2.1.1 OVERVIEW OF EIA

EIA is a systematic process to identify, predict and evaluate the environmental impacts of proposed actions and projects. The process is applied prior to major decisions and commitments being made. Wherever appropriate, social, cultural and health effects are considered as an integral part of EIA. Particular attention is given to practical implementation of EIA to prevent and mitigate significant adverse effects of proposed undertakings.

#### 2.1.2 OBJECTIVES OF EIA

The overall objective of the EIA is as follows:

- Description of the proposed project, including an estimate of emissions, effluent and waste and consideration of the project alternatives;
- Identify and investigate all impacts of the proposed project on the physical, biological, and socio- economic environment;
- Evaluation of the baseline environmental conditions in the impact zone to provide a basis for assessing the incremental impacts of the proposed project, including existing pollution levels and nuisance conditions;
- Identification and assessment of the potential impacts on the environment during each of the

project phases;

- To propose mitigation measures that would help the Project Proponent in conducting the operation in an environmental sustainable manner; and
- To develop an Environmental Management Plan that would assist the Project Proponent in the effective implementation of the recommendations of the EIA.

### 3 SCOPING

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#### 3.1 SPATIAL AND TEMPORAL BOUNDARIES OF ENVIRONMENTAL ASSESSMENT

Project land is owned by project proponent. Impacts have been assessed for the immediate and direct area of influence of the project defined as:

- Immediate Area of Influence: Within the proposed project site boundary.
- Direct Area of Influence: Within 5 Km from the proposed project site boundary.

Effects on socioeconomic receptors and resources have been assessed for the construction and operational phases of the proposed project. The proposed project activities are predicted to last for a period of 5-6 months within which the potential impacts have been assessed. The operational impacts have been assessed for the entire lifespan of the facility. The impacts related to the decommissioning of the proposed project will be assessed at the time of decommissioning which will involve carrying out site assessment study at the proposed project location.

#### 3.2 SCOPE OF EIA

This consolidated EIA report covers the examination of physical, biological, environmental and socioeconomic impacts of the proposed project

The spatial and temporal scope of the project is described below:

##### 3.2.1 SPATIAL SCOPE

Impacts have been assessed for the immediate and direct area of influence of the project defined as:

- Immediate Area of Influence: Within the proposed project site boundary.
- Direct Area of Influence: Within 5 Km from the proposed project site boundary.

##### 3.2.2 TEMPORAL SCOPE

Effects on socioeconomic receptors and resources have been assessed for the construction and operational phases of the proposed project. The proposed project activities are predicted to last for a period of 5-6 months within which the potential impacts have been assessed. The operational impacts have been assessed for the entire lifespan of the facility. The impacts related to the decommissioning of the proposed project will be assessed at the time of decommissioning which will involve carrying out site assessment study at the proposed project location.

##### 3.2.3 EIA METHODOLOGY

The EIA project passes through series of stages prior to attaining approval from relevant environmental protection agency. The EIA process and the approach followed for the proposed project is defined below:

### 3.2.4 SCOPING

Scoping is an early stage in the process and is designed to ensure that the environmental studies provide all the relevant information on:

- The impacts of the project, in particular focusing on the most important impacts;
- The alternatives to the project;
- Other environmental sensitivities to be addressed at early stage.

The EIA process started with the scoping study. The purpose of scoping was to identify:

- Important issues to be considered in an EIA;
- Appropriate time and space boundaries of the EIA study;
- Information necessary for decision-making;
- Significant effects and factors to be studied in detail.

The scoping was followed by data collection describes in subsequent section.

### 3.2.5 DATA COLLECTION

Following literature reviews and data collection was carried out for EIA:

- A generic description of the proposed project and its related activities was collected from the proponent.
- Legislative review of the applicable laws, regulations, guidelines and standards from literature search.
- Baseline of the area's environmental and socio-economic settings was collected through literature search and field surveys.

### 3.2.6 Baseline

The environmental impact is measured through a change in the environment, resulting from a designated action or activity. In order to identify such a change, it is essential to have as complete as practicable understanding of the nature of the existing environment, prior to its interaction with the proposed activity. This translates into the need to characterize the existing baseline environmental conditions, including establishing prevailing conditions for a range of environmental media, particularly air, water, soil and groundwater, flora and fauna and the human environment.

This was achieved through a detailed review of all secondary resources (i.e. existing documentation and literature); and the undertaking of project specific baseline studies and surveys to collect supplementary data in the following areas:

- Geology;

- Flora and fauna;
- Water quality characteristics;
- Traffic;
- Ambient air quality;
- Noise conditions;
- Socio-economic conditions;
- Archaeology.

Both the existing secondary sources and literature studies were conducted and integrated into one coherent description of baseline characteristics.

### **3.2.7 EVALUATION OF ALTERNATIVES**

To establish an environmentally sound preferred option for achieving the objectives of the proposed project, different alternatives including site selection and technology alternatives were studied in collaboration with the project proponent. Technology selection was made taking in to consideration environmentally, economically and socially suitable as well as technically feasible options.

### **3.2.8 STAKEHOLDER CONSULTATION**

Stakeholder consultation was carried out for the proposed project with primary and secondary stakeholders of the project. Following steps were involved to attain stakeholder consent:

- Providing information on the proposed project activities;
- Identifying the stakeholders concerns, expectations and apprehensions about the proposed project;
- Summarizing the process outcome.

### **3.2.9 IMPACT ASSESSMENT AND MITIGATION**

The information collected in the previous phases was used to assess the potential environmental impacts of the proposed project activities. The impact assessment approach is provided in **Table 4**. Impacts of project activities on environment. The issues studied during impact assessment include potential impacts on:

- Physical environment of the area
- Biological environment of the area
- Socio-economic environment of the area

Table 4: Impact assessment approach

Impact Characteristics	Categories
<b>Nature of the Impact</b>	<p><b>Direct:</b> The environmental parameter is directly changed by the project.</p> <p><b>Indirect:</b> the environmental parameter changes as a result of change in another parameter.</p>
<b>Duration of the impact</b>	<p><b>Short term:</b> Lasting only till the duration of the project such as noise from the construction activities.</p> <p><b>Medium term:</b> Lasting for a period of few months to a year after the project before naturally reverting to the original condition.</p> <p><b>Long term:</b> Lasting for a period much greater than medium term impacts before naturally reverting to the original condition.</p>
<b>Geographical Location of the impact</b>	<p><b>Local:</b> Within the area of project i.e. operation site and access road. Regional: Within the boundaries of the project area.</p> <p><b>National:</b> Within the boundaries of the country.</p> <p><b>Global:</b> Trans-boundary impacts</p>
<b>Timing</b>	<p>Construction</p> <p>Operation</p>
<b>Likelihood of the impact</b>	<p><b>High:</b> High likelihood of occurrence during lifetime of operation, Regular/continuous part of operations.</p> <p><b>Moderate:</b> Moderate possibility of occurrence during lifetime of operation, Periodic/occasional part of operations.</p> <p><b>Low:</b> Unlikely to occur during lifetime of operation.</p>

Impact Characteristics	Categories
<b>Reversibility of the impact</b>	<p><b>Reversible:</b> When a receptor resumes its pre-project condition.</p> <p><b>Irreversible:</b> When a receptor does not or cannot resume its pre-project condition.</p>
<b>Significance of the impact</b>	<p><b>Major, Moderate, Minor, Negligible and Beneficial</b> Based on the consequence, likelihood, reversibility, geographical extent, duration, level of public concern and conformance with legislative or statutory requirements.</p>
<b>Consequence severity of impact</b>	<p><b>High:</b></p> <ul style="list-style-type: none"> <li>▪ Serious/catastrophic damage to environment</li> <li>▪ Direct legislative requirement</li> <li>▪ Corporate requirement</li> <li>▪ Serious threat to corporate reputation/profitability/ability to do business.</li> </ul> <p><b>Medium:</b></p> <ul style="list-style-type: none"> <li>▪ Measurable damage to the environment</li> <li>▪ Subject to potential future legislation</li> <li>▪ Potential to affect reputation/cost</li> <li>▪ Implication/reduced efficiency</li> </ul> <p><b>Low:</b></p> <ul style="list-style-type: none"> <li>▪ Negligible damage to the environment No risk to business</li> </ul>

### 3.3 IMPORTANT ISSUES AND CONCERNS RAISED DURING CONSULTATION

During consultation it was observed that maximum of people was in favor of project and following issues and concerns were raised. Stakeholder Consultation it is mentioned in detail in **Chapter 10**.

- During survey following concerns of the local community, Government Departments and Environmental Practitioners and experts were noted:
- Nuisance must be controlled.
- Latest/State of the art technology must be adopted.
- Locals should be preferred for the job opportunities.
- 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.

### 3.4 SIGNIFICANT IMPACTS AND FACTORS TO BE DETERMINED

Main impacts and factors to be determined are:

- Occupational Health and safety
- Site Security
- Traffic Management
- Hygiene management
- Job opportunities for locals
- Resource conservation
- Avoid excessive water consumption
- Energy efficient techniques must be adopted
- Proper site restoration after construction
- Tree plantation at designated green areas
- Emergency preparedness

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## **4 CONSIDERATION OF ALTERNATIVES**

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### **4.1 SITE ALTERNATIVES (SELECTION AND REJECTION CRITERIA)**

The land is already owned by the project proponent and considered suitable both in terms of environment and physical constraints.

- Transportation infrastructure (road network) is available.
- Safe distance from sensitive receptors (residential area & protected area)
- The selected site is under the ownership of the proponent.
- No land use change is being foreseen due to implementation of said project.

### **4.2 NO PROJECT OPTION**

The “No Project Option” alternative would mean that the proposed project should not be installed. This also means that the import of disposable syringes will be continued. It is a common observation most of disposable syringes are imported. So, establishment of proposed unit is dire need of time.

### **4.3 DESIGN/TECHNOLOGY ALTERNATIVES (SELECTION AND REJECTION CRITERIA)**

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

### **4.4 ENVIRONMENTAL ALTERNATIVES (SELECTION AND REJECTION CRITERIA)**

Environmental considerations are of utmost importance in selecting site. Being in an industrial zone there is no sensitivity in the area from environmental setting point of view. Thus there is no ecologically sensitive or declared protected area such as territorial waters, forest, game reserve or biodiversity parks within a 10 km radius of the project site, requiring the proponent to look for site alternatives.

### **4.5 ECONOMIC ALTERNATIVES (SELECTION AND REJECTION CRITERIA)**

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.

## 5 DESCRIPTION OF PROJECT

This chapter provides the description of “M/S Ultimate Medical Care Pvt Ltd (type and category of project, location and layout, vegetation features of site, project schedule of implementation and complete description of proposed project related to its process and steps.

### 5.1 TYPE & CATEGORY OF PROJECT

According to Review of IEE and EIA Regulations, 2000; the proposed project falls under Category B “**Manufacturing & Processing**” mentioned in Schedule-II.

### 5.2 OBJECTIVES OF PROJECT

The objective of the proposed project is to manufacture quality and hygienic syringes for use in hospitals and clinics etc.

### 5.3 LOCATION AND SITE LAYOUT OF PROJECT

The project site is located at Plot No. 126-B Quaid-e-Azam Business Park, Sheikhpura. Google Earth map of site is given in **Fig-1**. The nearby population to project is **534m** distant from project site.



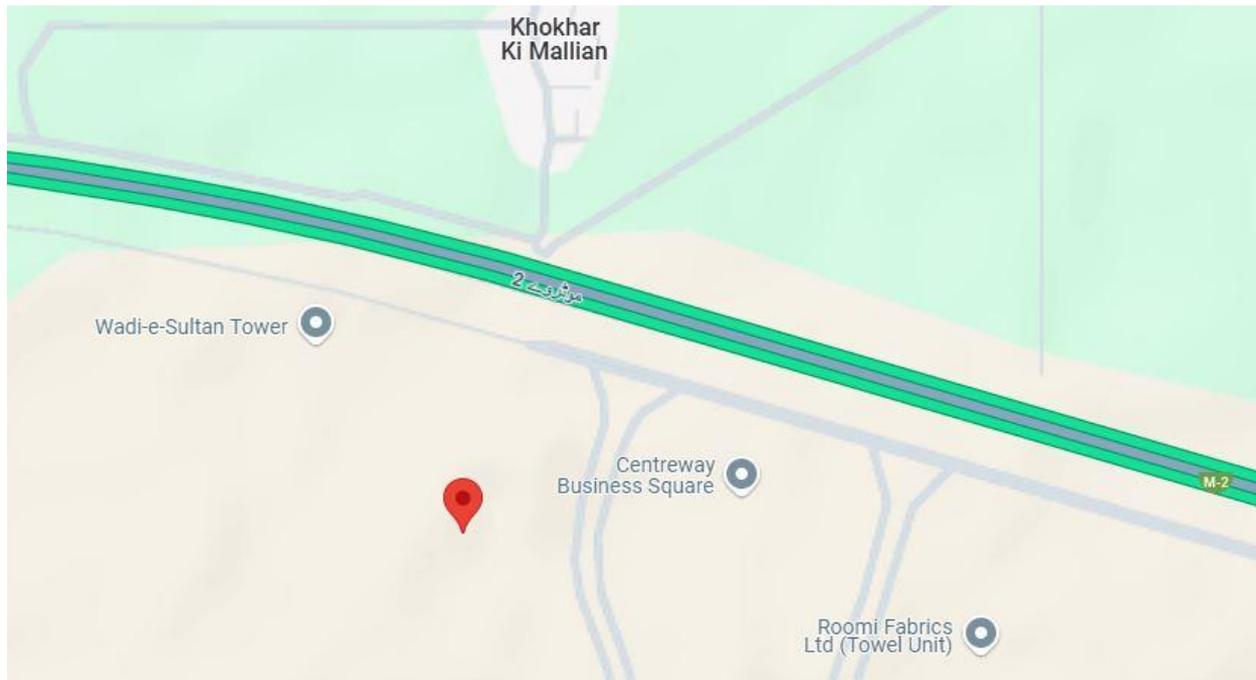
**Figure 1: Google earth map of project**

#### 5.4 LAND USE ON THE SITE

The site is owned by project proponent. Topography of the area is almost flat with no noticeable variation in the surface. There are no mountains or hills of any kind could be seen in the area.

#### 5.5 ROAD ACCESS

The site is well connected to main road and it is well accessible via Sheikhupura-Islamabad Motorway. Road access map of site is given in **Fig-2**



**Figure 2: Road access map**

#### 5.6 VEGETATION FEATURES OF THE SITE

There is no vegetation, as the current project is located within industrial estate. However, proponent will make has green belts, garden and plant ornamental plants.

#### 5.7 COST AND MAGNITUDE OF OPERATION

Total cost of the proposed project is estimated to be around **100 million PKR** which includes the provision of installation, associated amenities and cost for utilities and equipment/machinery. Thus, falls under Schedule II for which Environmental Impact Assessment (EIA) report is required.

## 5.8 SCHEDULE OF IMPLEMENTATION

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

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

1st Stage: The stage–1 comprises the onsite contouring studies and soil investigations.

2nd Stage: The stage –2 comprises the following task:

- Laying of foundations excavation and commencement of erection work.
- Start of civil, electrical and mechanical work.
- Development of basic infrastructure.
- Fitting of instrumentation.

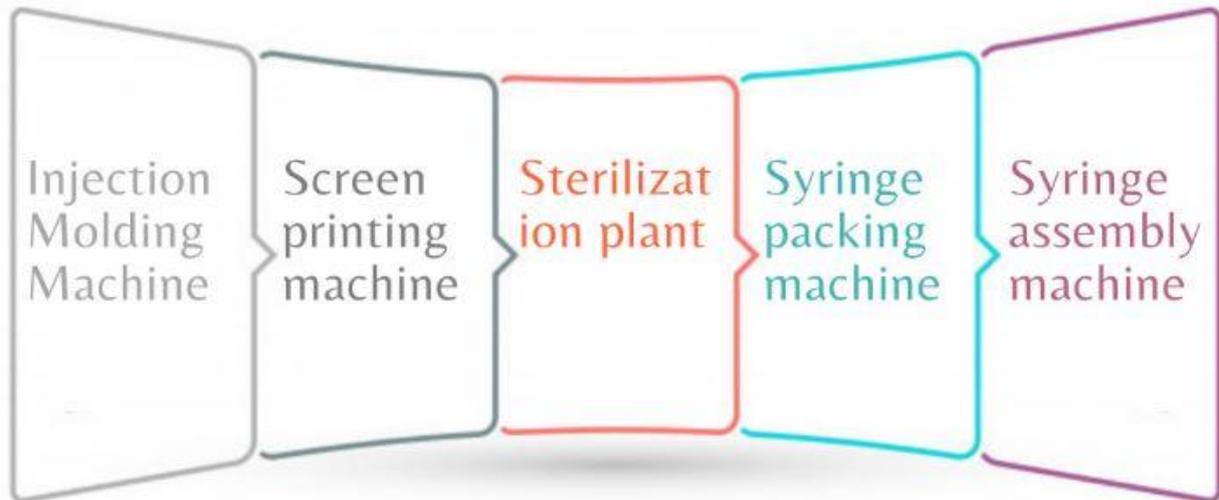
3rd Stage: The stage –3 comprises the following task:

- Equipment erection completion.
- Completion of the basic infrastructures water supply system, electricity supply etc.

4th Stage: The last stage will be Commencement of regular operation.

## 5.9 DESCRIPTION OF THE PROJECT (PROCESS FLOW CHART/STEPS, TECHNOLOGY, RAW MATERIAL AND PRODUCES, BY-PRODUCTS)

The proposed project is the establishment of manufacturing of IV Drip Solutions, IV infusion sets & disposable syringes of 3ml, 5ml, 10 ml and infusions sets. The production process of disposable syringes and infusion sets is given below.

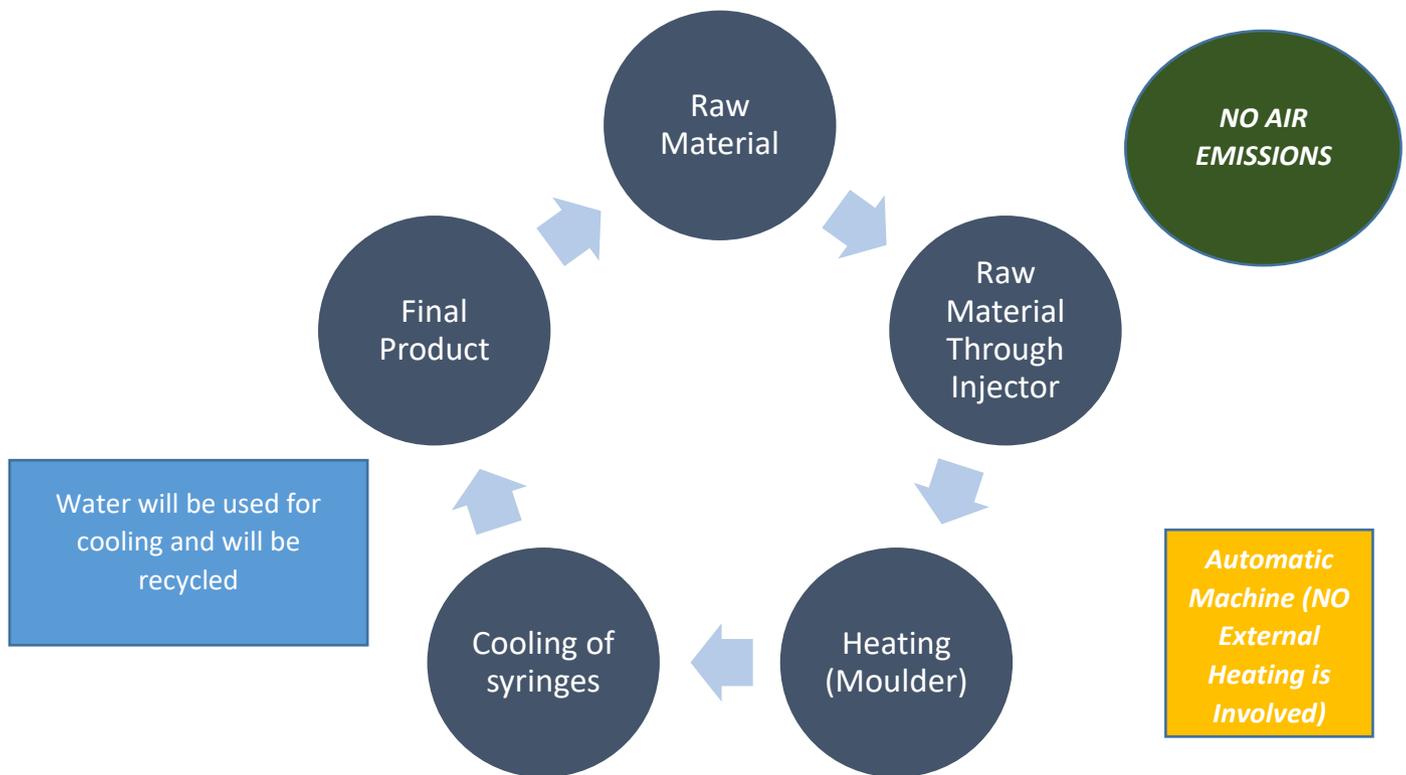


**Figure 3: Production process**

## **5.10 SYRINGE MANUFACTURING**

### **5.10.1 MOLDING**

Syringes and infusion sets will be produced by injection molding machine. The raw material will be introduced in injection molding machine and will be converted into desired size e.g., 3ml, 5ml, & 10 ml. That is from the injection mold of the preform to the removal of the preform from the injection cavity, and to stretch blow the preform to a syringe all in one machine, while the temperature remain constantly high for the whole process as injection molding and blow molding, the material should in an elastic form. This will save a lot of energy as the material only has to be heated only once, that is when it is injected to the cavity to produce the preform.



### 5.10.2 SCREEN PRINTING

After the completion of the first step, the next thing is to print the injections appropriate to their standard level marking.

### 5.10.3 STERILIZING

After printing the syringes will pass through sterilization process to kill any bacteria on it.

### 5.10.4 SYRINGE ASSEMBLY

The syringe assembly process is done by the Hypodermic syringe also known as the hypodermic needle is a type of device used by the medical experts to transfer the liquids into or out of our body. It is made from a hollow needle which is attached to a tube and a plunger. When the handle of the plunger is pulled back the fluid is then drawn into the tube. The fluids are then forced through the needle when the handle is pushed down. There is various syringe assembly machine supplier who assists in procuring the machines and provide a demonstration of the running machines in various facilities.

**5.10.5 PACKING**

After all above described process, the syringes will be packed by a packing machine.

**5.11 IV SOLUTION DRIPS**

Here is a **Process Flow Diagram** and step-by-step explanation for the **Preparation of Intravenous IV Drips and IV Solutions**, including the **machines and processes involved**



**5.11.1 Water Purification System**

The preparation begins with water purification to produce **Water for Injection (WFI)**, which is critical for sterile IV solutions. This is achieved using a combination of **Reverse Osmosis (RO) units**, **Electrodeionization (EDI) modules**, **pre-treatment filters**, and **UV sterilizers**. These machines eliminate dissolved salts, bacteria, and pyrogens from the water, ensuring pharmaceutical-grade purity.

**5.11.2 Compounding (Solution Preparation)**

In a sterile environment, **active pharmaceutical ingredients** such as sodium chloride, dextrose, or lactate are dissolved and mixed with WFI. This process is carried out in **stainless steel compounding tanks**

equipped with **agitators** and **load cells** for precision mixing and dosing. The mixing takes place under **ISO Class 6 or Class 7 cleanroom conditions** to maintain aseptic standards.

### 5.11.3 Filtration Unit

The compounded solution is passed through **0.22-micron membrane filters** using an **inline filtration system** to remove any remaining particulates or microbes. **Filter integrity testers** are used to verify the filter's effectiveness, ensuring the solution is sterile before it proceeds to the filling stage.

### 5.11.4 Filling Machine

The sterile solution is then transferred to an **automated IV filling machine**, where it is filled into either **IV bags** (PVC or non-PVC) or **glass bottles**. **Volumetric piston fillers** or **peristaltic pumps** ensure accurate dosing. This step is conducted under **laminar airflow cabinets** to prevent contamination during the filling process.

### 5.11.5 Sealing Machine

After filling, the containers are sealed using **heat-sealing machines** for IV bags or **capping machines** for bottles. This ensures the containers are airtight and leak-proof, maintaining sterility until use.

### 5.11.6 Sterilization

The sealed containers are subjected to **terminal sterilization** in **autoclaves**, which use **steam at 121°C and 15 psi** to kill any remaining microorganisms. For glass bottles or heat-stable formulations, **dry heat sterilizers** may also be used. This step is crucial for final microbial safety.

### 5.11.7 Packaging Unit

Sterilized and inspected IV drips are packed using **shrink-wrapping machines** and **cartoning machines**. Proper packaging ensures protection during storage and transportation, reducing the risk of contamination or damage.

### 5.11.7 Labeling and Dispatch

Finally, each product is labeled with necessary information such as **drug name, composition, batch number, manufacture and expiry dates**, and **storage instructions** using **automated labeling machines**. **Barcode systems** and **batch coding machines** ensure accurate tracking. After labeling, the products are sent for dispatch to hospitals, pharmacies, or healthcare centers.

## 5.12 INFUSION SET

Infusion sets will also be made from molding machines and then will be sterilized and packed.

## 5.13 LIST OF MACHINERY

Details of machinery to be installed is given below in Table-6.

**Table 5: List of Machinery**

Sr. No.	Machinery Details	Quantity
i.	Moulding Machine	01
ii.	Reverse Osmosis (RO) System	01
iii.	Stainless Steel Compounding Tanks	01
iv.	IV Bag Sealing Machine (Heat Seal)	01
v.	Automatic IV Bag Filling Machine	01
vi.	Assembly Machine	01
vii.	Printing Machine	01
viii.	Packing Machine	01
ix.	Sterilizer	01

**5.14 RESTORATION AND REHABILITATION PLANS**

There will be no any matter of rehabilitation as the site is already owned by the project proponent. However, at the end of the life of the unit, it will be duly dismantled with special precautions to avoid/minimize pollution and at the same time taking all safety precautions to protect human life and property around the project site. Debris or any other wastes resulting from demolishing will be disposed-off in environmentally sustainable fashion. The materials capable of recycling/reuse will be either sold in the market or to be reused for other suitable purposes. While dismantling, Government rules and regulations as applicable to such activities will be strictly adhered. Safety measures as desired under the code of demolition will be adopted to avoid any harm to humans, property around, or the environment in the project area. Dust to be generated will be minimized by constant sprinkling of water. After completion; all demolishing matrix, debris and garbage will be removed off immediately from the site within the minimum possible time under safe conditions. Any minor spillover of these materials will be cleared adequately. The land, if and where pitted will be adequately levelled. On the whole, the project

site and the area in its near vicinity will be made neat and clean.

#### **5.15 GOVERNMENT APPROVALS**

The environmental approval according to the Section 12 of Punjab Environmental Protection Act is the mandatory requirement of the project.

## 6 DESCRIPTION OF ENVIRONMENT

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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.

### 6.1 PHYSICAL RESOURCES

#### 6.1.1 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 Sheikhpura towards north and northeast, by Sheikhpura, 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.

#### 6.1.2 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.

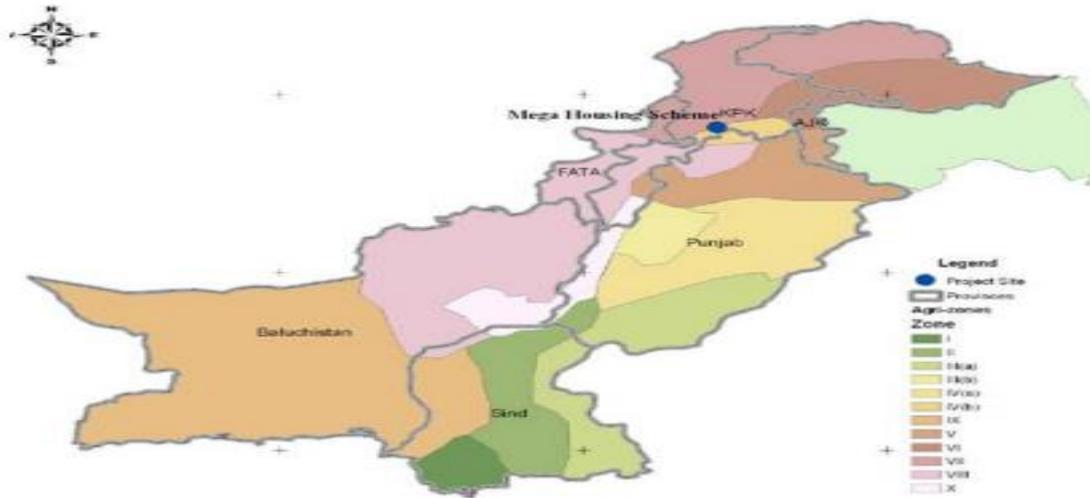


Figure 6: Agro-Ecological Zones of Pakistan

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, as 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 Clinoclone, 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.

### **6.1.3 Climatology**

#### **6.1.3.1 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).

#### *6.1.3.2 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
<b>Yearly Average</b>	<b>60</b>	<b>33</b>	<b>6</b>	<b>1</b>	<b>0.3</b>	<b>0.1</b>	<b>NW</b>

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.

#### 6.1.3.3 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

#### 6.1.4 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.

**6.1.5 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.

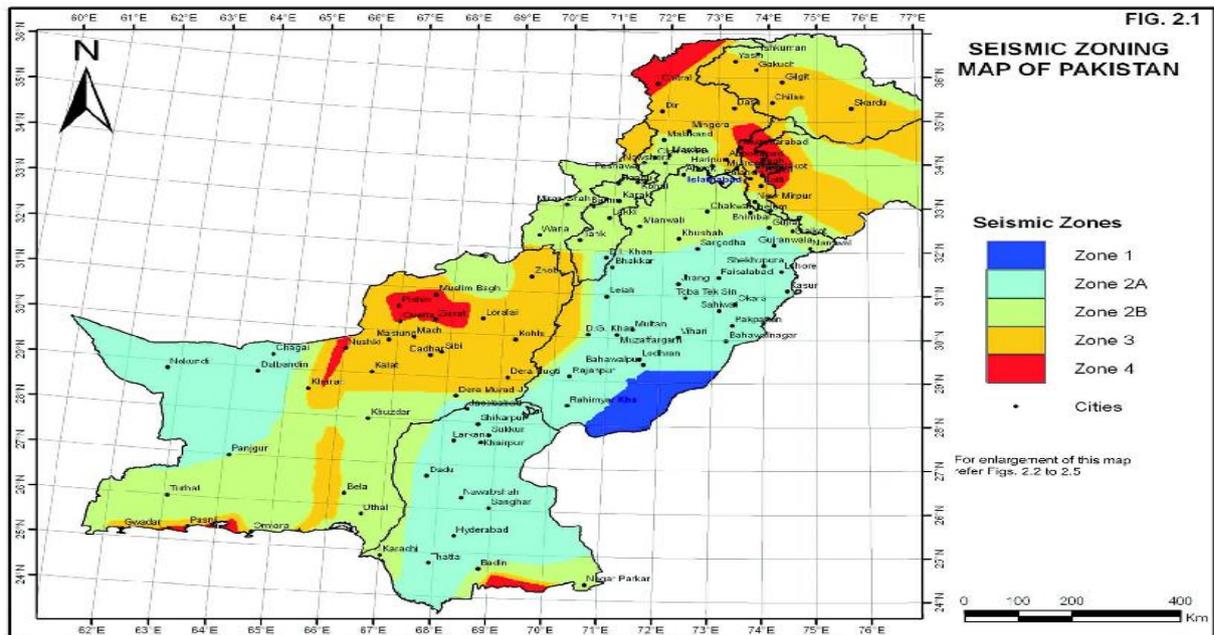


Figure 7: Seismic Zones of Pakistan

### **6.1.6 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.

### **6.1.7 Water Logging and Salinity**

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

### **6.1.8 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.

### **6.1.9 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).

## **6.2 Ecological Resources**

### **6.2.1 Marine and Aquatic Ecology**

This is not applicable to the Project area.

### **6.2.2 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.

### **6.2.3 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.

### **6.2.4 Endangered Species**

No endangered species exist in the project area.

## **6.3 Economic Development**

### **6.3.1 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, Sheikhpura, 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.

### **6.3.2 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 routes 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.

### **6.3.3 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

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## **DESCRIPTION OF ENVIRONMENT**

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.

## 6.4 Quality of Life Values

### 6.4.1 Communities Population and Features

#### 6.4.1.1 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 Sheikhpura.

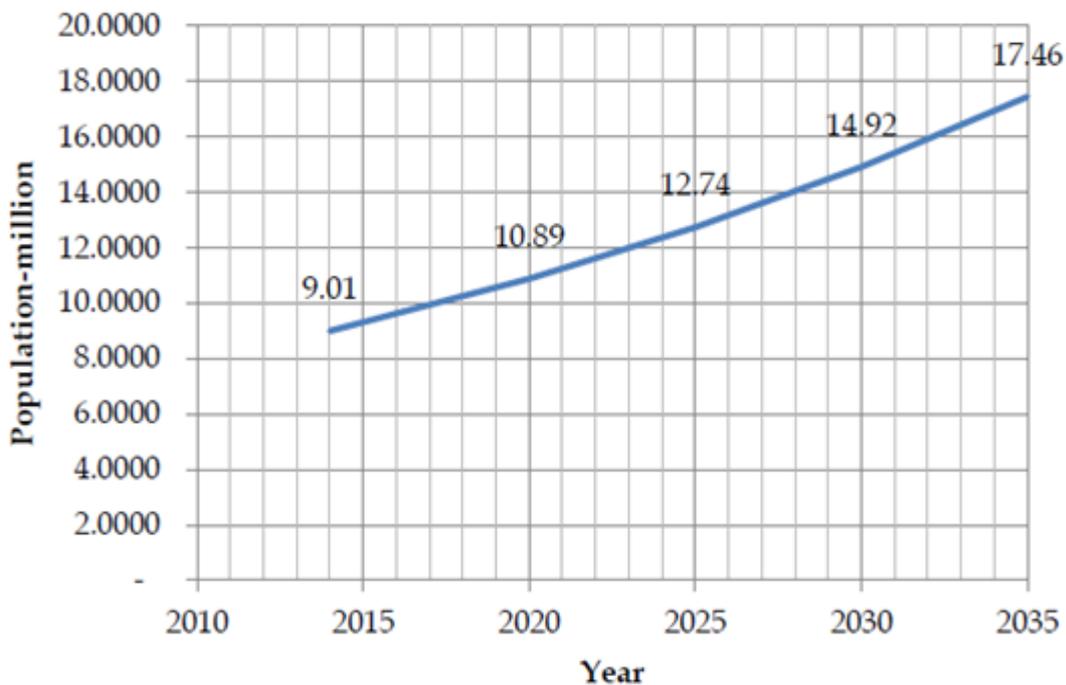


Figure 8: Projected Population of Faisalabad

The 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.

**6.4.2 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.

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.

**6.4.2.1 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.

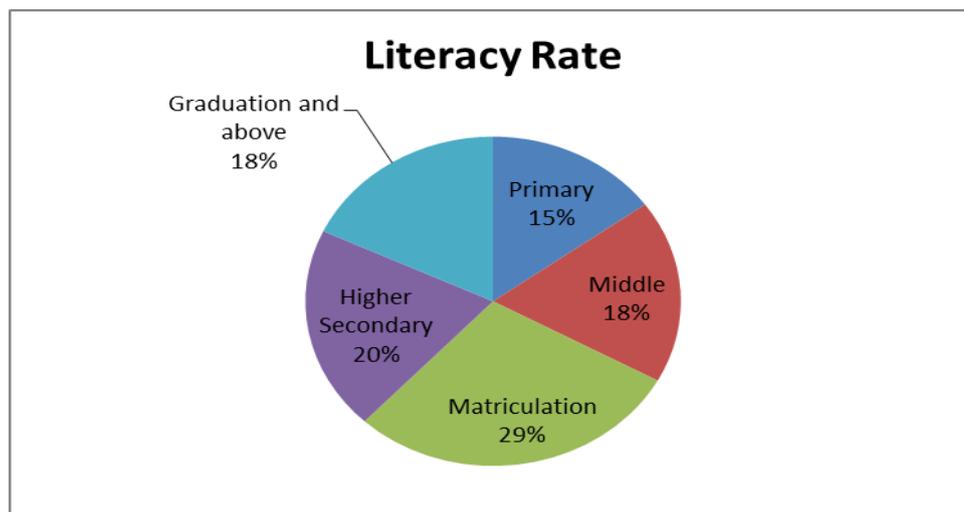
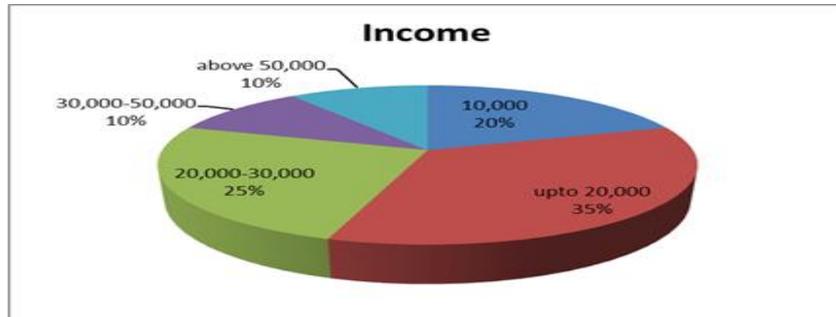


Figure 9: Literacy Rate of Project Area

**6.4.2.2 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.



Income Level

**6.4.2.3 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

#### 6.4.2.4 Languages

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

#### 6.4.2.5 Dress

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

#### 6.4.2.6 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)

#### 6.4.2.7 Educational Facilities

Following Educational Facilities present near the project site:

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

#### 6.4.2.8 *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.

### 6.5 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.

#### 6.5.1 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.

#### 6.5.2 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.

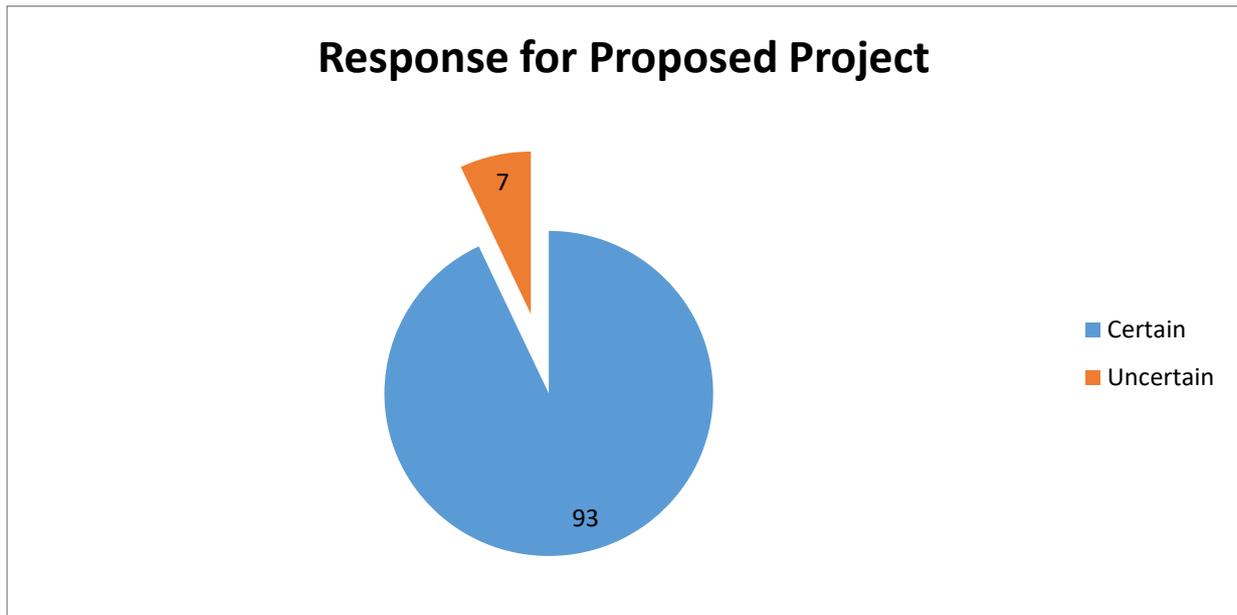


Figure 12: Percentage of people in favor or against the project

### 6.5.3 Concerns and Solutions

Table 10: Concerns of Stakeholders

COMPONENTS	CONCERNS	SOLUTIONS
<b>Environmental Enhancement</b>	Trees should be planted to avoid any impact	<ul style="list-style-type: none"> <li>Trees will be planted along boundary of project</li> <li>Indigenous trees around the facility should be planted to control air pollution</li> <li>Removal of shrubs and bushes should be avoided to the extent possible</li> </ul>
<b>Socio-Economic Uplift</b>	Workers should be hired from local community	<ul style="list-style-type: none"> <li>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.</li> </ul>
<b>Noise</b>	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.
<b>Traffic Congestion</b>	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.

## 7 IMPACT ASSESSMENT

This section discusses the potential environmental impact of proposed project, methodologies for impact identifications and characteristics of impacts including nature, magnitude, extent and location, timing, duration, reversibility, risk. The assessment carried out in this Section is based on potential impacts on overall environmental receptors within the project area.

### 7.1.1 METHODOLOGIES FOR IMPACT IDENTIFICATION

The potential impacts due to establishment of proposed unit are mostly beneficial. During construction phase, adverse environmental & social impacts are depending on the resources and receptors involved along with other parameters such as; geographical scope (magnitude and extent), temporal scope (duration) and reversibility. It is anticipated that this project will have maximum positive impacts as it is environmentally friendly project.

Moreover, the project is expected to result in negative impacts of short-term duration and transient in nature. Having identified and characterized the potential significant impacts during design, construction and operation phase of project an Environmental Impact Severity Matrix & checklist to summarize all the identified impacts as mentioned below in tables.

**Table 6: Impact significance criteria**

Impact	Criteria
<b>No Impact</b>	When the proposed activity will have no impact
<b>Long Term</b>	When the impact is of high intensity with high spread and high duration or of high intensity with medium spread and medium duration
<b>Moderate Term</b>	When the impact is of moderate intensity with high spread and high duration or of high intensity with low/ moderate spread and low duration
<b>Short Term</b>	When the impact is of low intensity but with moderate spread and moderate duration or of moderate intensity
<b>Insignificant</b>	When the impact is of low intensity, low spread and low duration

**Adverse** When the impact is of large intensity, spread easily and long-term

**Beneficial** When the impacts are positive and improve the environmental conditions

**Table 7: Impact matrix checklist for construction phase**

Environmental Sensitivities	Intensity of Impact						Impact Nature		Impact Significance				
	Low Intensity	Moderate Intensity	High Intensity	Local	Moderate	Regional	Beneficial	Adverse	Insignificant	No Impact	Short Term	Moderate	Long Term
<b>Physical Parameters</b>													
Air Quality		?		?									
Noise		?			?								
Water Quality		?			?								
<b>Biological Parameters</b>													
Land Environment													
Flora													
Fauna													
<b>Physical Parameters</b>													
Local Economy	?												
Social Impacts	?												
Health & Safety	?												

Table 8: Impact assessment checklist for operational phase

Environmental Sensitivities	Intensity of Impact						Impact Nature		Impact Significance				
	Low Intensity	Moderate Intensity	High Intensity	Local	Moderate	Regional	Beneficial	Adverse	Insignificant	No Impact	Short Term	Moderate	Long Term
<b>Physical Parameters</b>													
Noise		?											
Water Quality													
Odor	?												
<b>Biological Parameters</b>													
Land Environment													
Flora													
Fauna													
<b>Physical Parameters</b>													
Local Economy													
Social Impacts													
Health & Safety													

**7.2 CHARACTERISTICS OF IMPACTS (NATURE, MAGNITUDE, EXTENT AND LOCATION, TIMING, DURATION, REVERSIBILITY AND RISK)**

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

**Table 9: Impact assessment characteristics**

Sr#	Environmental Component	Impact Characteristics												
		Duration		Location		Frequency		Extent		Significance			Reversibility	
		Long	Short	Direct	Indirect	Cont.	Intermittent	Wide	Local	Large	Moderate	Minor	Rev.	Irrev.
<b>Beneficial Impacts</b>														
1	Employment Opportunity	☑		☑		☑			☑		☑		☑	
2	Solid Waste Management	☑		☑		☑			☑		☑		☑	
3	Land Value	☑			☑	☑			☑			☑		☑
4	Tree Plantation	☑		☑		☑			☑		☑			☑
5	Wastewater		☑	☑		☑		☑			☑		☑	
<b>Adverse Impacts</b>														
1	Solid Waste	•		•		•			•		•		•	
2	Health and Safety		•		•		•		•			•		•

3	Physical Hazards		•	•			•		•			•		•
4	Security Risks		•		•		•		•		•		•	

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## **8 SCREENING OF POTENTIAL ENVIRONMENTAL IMPACTS AND MITIGATION MEASURES**

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This Chapter identifies the potential impacts (positive and adverse) on the physical, biological and socio-economic environment of project area due to proposed project. It also identifies measures that will help to mitigate the adverse environmental and social impacts (if any) and it will enhance positive impacts of the project. Impacts are assessed by analyzing their magnitude and sensitivity, which is a legal requirement.

### **8.1 IMPACTS ASSOCIATED WITH PROPOSED PROJECT ACTIVITIES**

- Environmental Impact - Construction and Operation Activity
- Socioeconomic Impact - Construction and Operation Activity

### **8.2 PROJECT LOCATION**

There will be no impacts due to project location as the land is owned by project proponent. For the establishment the Disposable Syringes Manufacturing Unit an open plot in industrial area has been selected. In the project area or its vicinity no ecologically important area is present. However, no human settlement or infra-structure will be dislocated due to the establishment of project. So, no adverse impact is being envisaged. Hence, there is no need to change the design of project is required.

#### **8.2.1 COMPENSATION IN MONEY TERMS**

There is no damage envisaged to fauna, flora or any other biological source due to the establishment proposed project. However, agricultural land is being converted to the built-up area. So, no compensation in monetary terms will be needed as the land is owned by the project proponent.

#### **8.2.2 REPLACEMENT/RELOCATION/REHABILITATION**

The proposed project is located in open land where there is no sensitive area, population or natural resource is present which could be impacted due to the establishment of project. No replacement, relocation and rehabilitation is required for the proposed project establishment. However, at the end of the life of the unit, it will be duly dismantled with special precautions to

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## **SCREENING OF POTENTIAL ENVIRONMENTAL IMPACTS AND MITIGATION MEASURES**

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avoid/minimize pollution and at the same time taking all safety precautions to protect human life and property around the project site. Debris or any other wastes resulting from demolishing will be disposed-off in environmentally sustainable fashion. The materials capable of recycling/reuse will be either sold in the market or to be reused for other suitable purposes.

### **8.3 PROJECT DESIGN**

The proponent has planned to construct the unit on modern lines, meeting international standards, with incorporation of imported technology. The design, if maintained and operated in an environment-friendly manner, is expected to cast positive impact on the environment and will not pose any adverse impact or threat on any component of the environment.

The design of the proposed project will be sustainable and will follow the principles of energy conservation. The design of the main public buildings will follow the green building designs such as; maximum utilization of the sunlight, high roofs to keep the building cool, etc. Moreover, the building will be designed by keeping in consideration all the technical standards to avoid adverse impacts on the environment and society.

### **8.4 CONSTRUCTION PHASE**

Following impacts could be during constructional phase of project. The proposed project area is located in well-developed area and existing built-up area categorized as the industrial area (referring to the google earth view). The roads of the area are metaled. During the transportation of the raw-material such as cement, bricks, sand, gravels, etc. The dust clouds may be generated which could impact the local climatic conditions on temporary basis. This impact is considered in-significant because of the metaled road structure.

#### **8.4.1 MITIGATION MEASURES**

Impacts of raw materials transportation can be reduced significantly by adopting better management and monitoring practices. Following management and monitoring practices will be adopted to reduce the impacts:

- Proper tuning of vehicles should be done on the regular basis in order to control the air pollution generated by the burning of the fossil fuels in the vehicles
- Restrict excessive transportation of the vehicles as well as the speed of the haulage trucks that shall not exceed the speed limit of 40km/hour
- Careful site planning and managing the transportation routes for the vehicles carrying raw-materials
- Cover the vehicles with tarpaulin carrying sand and loose material
- The wind prone loose material should be covered and sprinkled with water on the regular basis.

#### **8.4.2 IMPACTS ON VEGETATION**

There are no vegetation present on site so no mitigation measures are required.

#### **8.4.3 IMPACTS ON WATER SOURCES**

During construction phase, water will be used for the preparation of the raw material, for watering under-construction buildings and consumption by the workers in various domestic activities. It will cause negative impact on underground water resource. The consumption of the water will be high causing minor negative impact on the water resource of the area. The groundwater may get polluted due to the presence/consumption of the chemicals and petroleum products on-site

#### **8.4.4 MITIGATION MEASURES FOR WATER**

Following mitigation measures will be required for water sources:

- Avoid un-necessary consumption of the water and close the tap when water isn't in use
- Special care will be required to protect the chemicals and petroleum products from spillage and contaminating the ground water sources
- Proper knowledge regarding the watering of the under-construction building should be given to the workers in order to conserve water
- Water efficient equipment and process will be used
- Awareness regarding the water conservation techniques should be carried out

#### **8.4.5 IMPACTS ON AIR QUALITY**

During construction phase, the machinery working on project site may cause air pollution due to release of the pollutants such as; carbon dioxide, methane, NO<sub>x</sub> and SO<sub>x</sub> from the burning of the fossil fuels in the vehicles. Dust may be generated due to the excavation activity and filling activities. No other impact is envisaged that may deteriorate the ambient air quality of the area.

#### **8.4.6 MITIGATION MEASURES FOR AMBIENT AIR QUALITY**

Following mitigation measures will be adopted to reduce the impact on the air quality:

- Proper tuning of vehicles should be done on the regular basis in order to control the air pollution
- It should be ensured that the high quality fuel is being used in the vehicles that are working on-site
- The material prone to wind should be covered with tarpaulin
- Avoid unnecessary movement of the trucks carrying raw-materials to avoid unnecessary air emissions
- Avoid excavation and filling activity on the windy days
- Impact can be minimized through a management programs which ensure dust will be controlled by regular watering the dusty and wind areas
- Abandoned excess laterite and stone aggregate littered around stock pile areas after construction completed changes the soil structure
- Regular water sprinkling may be done to control the dust generation

#### **8.4.7 IMPACTS DUE TO NOISE**

During construction phase, heavy construction machinery will be use. The machines are noisy and can cause a certain degree of nuisance to the nearby residents. The noise levels of machines and vehicles vary widely depending on the type of noise generated and level of activity. Some common impacts of noise nuisance include annoyance, sleep disturbance and interference with communication. Acceptable levels of noise are regarded to be 40 dB(A) during the night and 50 dB(A) during the day. Since construction will take place during the day only the 50 dB(A) level is

of importance. As the proposed project is not located in the residential zone so the noise related impacts will cause insignificant impact on the nearby community

#### **8.4.8 MITIGATION FOR NOISE**

Following mitigation measure will be adopted to reduce the noise;

- The noise related activities should be done during the day time to ensure minimum disturbance to the local community
- Proper tuning of the vehicles should be done on the regular basis, so that the noise level will be reduce up to the acceptable limits
- Noise related activities should be done speedily and completed as soon as practically possible
- Construction activity will be confined to the small reserved area

#### **8.4.9 IMPACTS ON SOCIO-ECONOMIC ENVIRONMENT**

During this phase, skilled and unskilled labor will be required. Employment opportunities for the un-skilled workers will therefore increase which will enhance the positive benefits for the local people who are in dire need of income for sustenance. Furthermore, indirect opportunities for employment will arise from the provision of services to the construction teams; sale of raw-material such as cement, bricks, sand etc., as well as food and beverages for the labor. After completion of construction phase serve as a permanent business opportunity.

#### **8.4.10 MITIGATION MEASURES**

No mitigation is required.

### **8.5 OPERATIONAL PHASE**

The environmental and socio-economic impacts associated with the operation phase are had been studied in detail. Following is the detailed description:

#### **8.5.1 WATER CONSUMPTION**

The increased withdrawal of surface water for the proposed project may affect the water availability for the other users of the project area. A significant impact will be interpreted, if water

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## **SCREENING OF POTENTIAL ENVIRONMENTAL IMPACTS AND MITIGATION MEASURES**

extracted for the project directly affects the ability of the community and other users to meet their water needs. The water usage will be the water required for domestic use of workers, for floor cleaning.

#### **8.5.2 MITIGATION MEASURES**

Following mitigation measures will be adopted:

- Water conservation program will be initiated to prevent wastage of water
- The management will ensure maximum recycling of washing water, so that overall consumption could be reduced
- Reusing the water for sprinkling purpose after floor cleaning

#### **8.5.3 WASTEWATER**

The building operations will generate wastewater in the form of domestic wastewater. The wastewater can be a potential source of pollution to surface and groundwater resources of the area. Domestic wastewater generated during building operation is estimated to be approximately 1.4m<sup>3</sup>/day. Implementation of the proposed mitigation measures and regular monitoring is not likely to leave any significant impact of the wastewater from the proposed facility.

#### **8.5.4 MITIGATION MEASURES**

Following mitigation measures will be adopted for effective management of wastewater:

- The grey water will be treated through settling tank which will be recycled to be re-used in gardening.
- Waste segregation measures would be employed to minimize entry of solid waste into the wastewater stream
- Water conservation strategies will be employed to avoid wastage of water
- Periodic sampling and monitoring of key parameters for wastewater effluent into the receiving body (drain or sewerage system) and for this purpose samples will be collected at the discharge point to ensure effective treatment

#### 8.5.5 NOISE

Noise cause stressful effect on the ears, nervous system and heart; especially to people exposed to noise above 85 dB (A) for long period of time. Due to the operation of the proposed project heavy machines can serve as the potential noise sources. This noise will depend upon the machine efficiency, their maintenance level and the nature of room housing it, and the atmospheric conditions. No significant increase in noise level in the community is envisaged under normal operation. Moreover, implementation of the below-stated mitigation techniques will also keep the noise impacts at minimum to the workers as well as to the community.

#### 8.5.6 MITIGATION MEASURES

Noise management and mitigation plan should follow the underlying strategy:

For people working in noisy installations, ear-protection aids like ear-plugs, ear-muffs, noise helmets, headphones etc. must be provided to reduce occupational exposure. This is possible if working methods are improved by:

- Proper designing and fabrication
- Proper lubrication and better maintenance of machines
- Covering noise-producing machine parts with sound-absorbing materials to check noise production
- Reducing the noise produced from a vibrating machine by vibration damping i.e. making a layer of damping material (rubber, neoprene, cork or plastic) beneath the machine
- Using silencers to control noise from automobiles, ducts, exhausts etc. and convey systems with ends opening into the atmosphere
- Using glass wool or mineral wool covered with a sheet of perforated metal for the purpose of mechanical protection

Noise can also be controlled with barriers by enclosing the source of the noise, by placing sound-reducing barriers between the worker and the source, or by increasing the distance between the worker and the source

- Tree plantation helps to block the propagation of sound. Proponent has planned tree plantation in and around the unit premises
- Sound-proof materials will also be used for construction
- During the project operation, it should be ensured that the noise level does not exceed prescribed limits as set by WHO or Pak-EPA; for which regular monitoring must be carried out.

#### **8.5.7 WASTE MANAGEMENT**

Improper disposal of the solid waste generated during the operational phase of proposed project can pose a health hazard; pollute soil, surface and ground water. Proper implementation of the mitigation measures will ensure that the residual impact from improper management and disposal of the waste is minimal. Monitoring and inspection will be undertaken to ensure compliance and minimize any residual impact.

Following mitigation measures will be adopted:

- Waste generation will be minimized by adopting waste management strategy of reduce, reuse and recycle
- A waste management plan will be prepared, implemented and monitored for the safe collection, storage and treatment/disposal of the building waste
- Quantities of waste disposed, recycled, or reused will be logged on a Waste Tracking Register
- Records of all waste generated will be maintained
- Training will be provided to personnel for identification, segregation, and management of waste
- Various waste containers for waste collection should be placed at appropriate locations in the building
- Waste management inspections will be undertaken on a regular basis of onsite waste management and of waste disposal contractors to ensure that the waste management procedures are being followed

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#### **SCREENING OF POTENTIAL ENVIRONMENTAL IMPACTS AND MITIGATION MEASURES**

Monitoring measures will include:

- Record of all waste generated
- Quantities of waste disposed, reused at site or sold should be logged on the waste tracking register
- Audit of waste management on annual basis
- The areas around the project boundary and access roads should be periodically inspected to verify that no project related waste is scattered in these areas

#### **8.5.8 AIR EMISSIONS**

The air emissions will release dust and particulate matter in the environment. If these emissions are not handled may damage the health of workers, may be the cause of public nuisances and the wear& tear of the shelling machinery is fast.

#### **8.5.9 MITIGATION MEASURES**

Following mitigation measures will be adopted:

- PPEs such as; dust mask will be provided to the workers
- Pre-cleaning will be carried out to reduce the dust emission
- Water sprinkling will be carried out as and when required

#### **8.5.10 EMERGENCY RESPONSE**

Incidents and accidents may take place unexpectedly during project operations no matter how effective, strong and efficient the mitigation measures for all adverse impacts; especially the safety issues may be adopted. These may include; fire hazard which may poses a serious threat.

#### **8.5.11 MITIGATION MEASURES**

Following mitigation measures will be adopted:

- Fire extinguishers should be properly maintained and checked periodically
- Adequate fire hydrant system should be installed
- Flammable materials should be prohibited in the premises
- Fire alarm systems should be maintained for detection and warning of fire

- Adequate training of workers on use of fire-fighting system to deal with the situation.
- Administration of the unit will make a proper evacuation plans for emergency escape from all halls
- Emergency call service must be made available
- Fire-fighting team must remain ready at all times

#### **8.5.12 OCCUPATIONAL HAZARDS**

It includes occupational hazards like physical injuries arising from accidents such as being hit by falling weak structures, being overrun by heavy equipment. The major safety issues in operational phase are:

- Electrical Hazards
- Machine Guarding
- Eye, Head and Foot Protection
- Fire and Explosion Hazards
- House-Keeping Issues

#### **8.5.13 MITIGATION MEASURES**

Following mitigation measures will be suitable:

- Care will be taken to properly ground and insulate all equipment
- Proper machine guarding, which is critical for the prevention of injuries to workers by isolating them from moving machinery, will be provided
- Head, arms and foot PPE's will be provided
- Fire-fighting equipment will be available and their locations will be clearly marked
- Exits from work places will be well marked and visible in dim light
- Fire water will be located throughout the plant in well-marked piping
- Housekeeping will be frequent and thorough to prevent slips, trips, and falls
- Workers will be told and encouraged to use PPEs as may be standardized
- Workers' awareness and safety wall chart showing safety symbols will be displayed.
- First Aid Box will be kept in easy approach of all in case of any injury or mishap.

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### **SCREENING OF POTENTIAL ENVIRONMENTAL IMPACTS AND MITIGATION MEASURES**

- Basic medical and health facilities will be provided to all employees
- Safety and warning devices such as reflectors, lights, etc. shall be installed at designated spots
- Visual monitoring of hazards and accidents will be done in order to control the potential hazard

#### **8.6 POTENTIAL ENVIRONMENTAL ENHANCEMENT MEASURES**

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 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 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

#### **8.7 BUILDING ENHANCEMENT**

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

##### **8.7.1 SOCIAL ENHANCEMENT MEASURES**

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

##### **8.7.2 EMPLOYMENT/POVERTY ALLEVIATION**

The employment opportunities in the project area will be increased due to the establishment of project at the proposed location. During establishment 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 total, the overall economic conditions of the area will be improved due to the establishment of the proposed project.

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### **SCREENING OF POTENTIAL ENVIRONMENTAL IMPACTS AND MITIGATION MEASURES**

### 8.7.3 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.

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## **9 ENVIRONMENTAL MANAGEMENT AND MONITORING PROGRAM**

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The potential environmental impacts are identified from the planning stage of proposed project through the Environmental Impact Assessment (EIA) process. The EIA has identified potential impacts that are likely to arise during the project. The EIA has examined in detail both negative and positive impacts at each stage of the project covering both construction and operations phase. To minimize the effects of adverse impacts the EIA has recommended mitigation measures. The proposed mitigation measures have been based on the understanding of the sensitivity and behavior of environmental receptors in the project area, the legislative controls that apply to the project and a review of good industrial practices while operating in similar environments.

For effective implementation and management of the mitigation measures an Environmental Management Plan (EMP) has been prepared. The EMP satisfies the requirement of the Punjab Environmental Protection Department Review of Initial Environmental Examination and Environmental Impact Assessment Regulations, 2000.

The EMP is a tool that serves as to manage environmental impacts and specifically focuses on implementation of mitigation measures in its true sense against likely environmental impacts.

### **9.1 PURPOSE AND OBJECTIVE OF THE EMP**

The primary objectives of the EMP are to:

- Facilitate the implementation of the mitigation measures identified in the EIA.
- Define legislative requirements, guidelines and best practices that apply to the project.
- Define the responsibilities of the project proponent.
- Define a monitoring mechanism and identify monitoring parameters in order to:
  - Ensure the complete implementation of all mitigation measures.
  - Ensure the effectiveness of the mitigation measures.
- Define requirements for environmental monitoring and auditing.
- Provide a mechanism for taking timely action in the face of unanticipated environmental situations.
- Identify training requirements at various levels.

## **9.2 COMPONENTS OF THE EMP**

The EMP consists of the following:

- Legislation and guidelines
- Organizational structure; roles and responsibilities
- Monitoring/Management plan
- Environmental monitoring
- Communication and documentation
- Change management Plan
- Training program/schedule

## **9.3 LEGISLATION AND GUIDELINES**

The EIA has discussed national and international legislation and guidelines that are relevant to the project; proponent will ensure that the project is conducted in conformance to the project proponent corporate environmental policy, national legislation and relevant international conventions and that guidance is sought from national and international guidelines. Project proponent will also ensure that its key project management staff and all its assigned contractors are aware of these legislation and guidelines prior to the start of project activities

## **9.4 DESCRIPTION OF PROPOSED MITIGATION ACTIONS**

It lists all the mitigation measures identified in the EIA and the associated environmental or social aspect in line during construction and operational phase with the administrative framework involving all the responsible implementing authorities who are required to take the planned actions/measures and monitor it accordingly. It enhances project benefits by reducing its impacts and making it environmental friendly. The environmental management and monitoring plan is given below in table.

Table 10: Description of proposed mitigation actions

Sr. No.	Project Activity	Impacts	Mitigation Measures	Responsibility
1	Water Resources	<ul style="list-style-type: none"> <li>▪ Depletion in groundwater aquifer</li> <li>▪ Water contamination</li> </ul>	<ul style="list-style-type: none"> <li>▪ Water extraction will be kept at minimum and waste management plan will be developed.</li> <li>▪ Wastewater from construction &amp; installation site will be directed to settling tanks.</li> <li>▪ Fuel and chemicals will be stored in covered and with bund walls, underlain with impervious lining.</li> <li>▪ Spill prevention plan shall be followed to mitigate any kind of spill.</li> </ul>	Proponent & Contractor
2	Air Quality	<ul style="list-style-type: none"> <li>▪ Dust emissions during construction activities.</li> <li>▪ Combustion products from vehicles used for project-related activities.</li> </ul>	<ul style="list-style-type: none"> <li>▪ Water will be sprinkled daily on all exposed surfaces to suppress emission of dust.</li> <li>▪ All construction equipment used during the project will be properly tuned and maintained in good working condition.</li> <li>▪ Regular maintenance of project vehicles to ensure that engines are in sound working condition and are not emitting smoke;</li> </ul>	Proponent & Contractor
3	Noise	<ul style="list-style-type: none"> <li>▪ Noise Pollution</li> <li>▪ Disturbance to the site workers</li> <li>▪ Nuisance for surrounding communities and wildlife</li> </ul>	<ul style="list-style-type: none"> <li>▪ Proper maintenance of vehicles and potentially noisy equipment.</li> <li>▪ Minimize/avoid unnecessary use of noisy machinery.</li> <li>▪ Blowing of horn will be prohibited.</li> <li>▪ Provision of Personal Protective Equipment (PPE) to the on-site personnel in high noise areas.</li> </ul>	Proponent & Contractor

4	Solid Waste	<ul style="list-style-type: none"> <li>Surface and groundwater pollution</li> <li>Soil contamination</li> </ul>	<ul style="list-style-type: none"> <li>Recyclable material will be separated at source and will be sold to waste contractor.</li> </ul>	Proponent & Contractor
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Sr. No.	Project Activity	Impacts	Mitigation Measures	Responsibility
		<ul style="list-style-type: none"> <li>Air pollution, odor</li> <li>Health hazards</li> <li>Aesthetic issues</li> </ul>	<ul style="list-style-type: none"> <li>containers in a fenced storage area with paved floor;</li> <li>On-site audits of the waste management will be undertaken on a regular basis during the period of project activity.</li> <li>Records of all waste generated during the project activity period will be maintained. Quantities of waste disposed, recycled, or reused will be logged on a waste tracking register.</li> <li>Training will be provided to personnel for identification, segregation, and management of waste.</li> <li>No waste will be dumped at any location.</li> </ul>	
5	Traffic Control	<ul style="list-style-type: none"> <li>Disturbance to local community</li> </ul>	<ul style="list-style-type: none"> <li>Movement of vehicles (trucks) will remain confined to defined access and limited to a specific duration.</li> <li>Regular maintenance of vehicles to reduce exhaust emissions.</li> <li>Parking at NO PARKING areas shall not be allowed.</li> </ul>	Proponent & Contractor

6	Worker's Health and Safety	<ul style="list-style-type: none"> <li>▪ Health problems or immediate risk may take place.</li> <li>▪ Occupational health of workers and community may be affected.</li> </ul>	<ul style="list-style-type: none"> <li>▪ Compliance to emergency response plan for emergencies and accidents will be ensured to avoid health safety risks.</li> <li>▪ Work safety measures and good workmanship practices are to be followed by the contractor to ensure no health risks for laborers.</li> </ul>	Proponent & Contractor
			<ul style="list-style-type: none"> <li>▪ Protection devices ( earmuffs) will be provided to the workers operating in the vicinity of high noise generating machines.</li> <li>▪ Proper maintenance of facilities for workers will be monitored.</li> <li>▪ Provision of protective clothing for labors e.g. helmet, adequate footwear, protective goggles, gloves</li> <li>▪ Ensure strict use of wearing PPE during work activities.</li> <li>▪ Provision of proper safety signage at sensitive/accident prone spots.</li> </ul>	
7	Socio-Economic / Local community	<ul style="list-style-type: none"> <li>▪ Community disturbance</li> <li>▪ Community awareness</li> <li>▪ Skilled and un-skilled jobs for local community</li> </ul>	<ul style="list-style-type: none"> <li>▪ All community grievances will be recorded and maintained in a Community Complaint's Register.</li> <li>▪ Maximum number of unskilled and semi-skilled jobs will be reserved for the local communities.</li> <li>▪ An increase in the income of locals may occur due to employment during project activities.</li> <li>▪ Communities will be informed about the project activities and possible disturbance in advance.</li> </ul>	Proponent & Contractor

**Table 11: Management and Monitoring Plan – Operation**

Sr. No.	Project Activity	Impacts	Mitigation Measures	Responsibility
1	Water Use / Wastewater	<ul style="list-style-type: none"> <li>Surface water contamination</li> <li>Pollution risk from accidental spillage</li> </ul>	<ul style="list-style-type: none"> <li>Wastewater from the proposed activities will be contained in settling tanks and will be reused.</li> <li>Compliance of effluent with PEQS will be ensured prior to discharge in water body.</li> <li>Water conservation practices will be followed to minimize the water usage.</li> <li>Water use will be monitored periodically to ensure that water is not wasted.</li> <li>In case of any accidental spillage, emergency plan should be implemented.</li> </ul>	Proponent & Contractor
2	Air Emissions	<ul style="list-style-type: none"> <li>Compliance with prescribed PEQS for ambient air</li> </ul>	<ul style="list-style-type: none"> <li>Proper ventilation and exhaust system for air passages;</li> <li>Control of processing exhaust emissions by proper maintenance of production unit/equipment;</li> <li>Proper maintenance of machinery is required to control emissions;</li> <li>Daily maintenance of transport vehicles is required to control air emissions.</li> </ul>	Proponent & Contractor
3	Noise	<ul style="list-style-type: none"> <li>Noise Pollution</li> <li>Disturbance to the personnel handling the installations</li> </ul>	<ul style="list-style-type: none"> <li>The noise generating area at the operations will be lined with boundary wall to reduce impact on the workers.</li> </ul>	Proponent & Contractor

			<ul style="list-style-type: none"> <li>▪ Operators of proposed developments will wear ear protections while operating or working nearby high noise emission sources.</li> <li>▪ Tree plantation to reduce the effect of noise pollution.</li> </ul>	
			<ul style="list-style-type: none"> <li>▪ The proposed project will be placed such that the cumulative noise levels at walkways and worker locations will not exceed PEQS for noise.</li> </ul>	
4	Waste Management	<p>If not managed properly;</p> <ul style="list-style-type: none"> <li>▪ Surface and groundwater pollution</li> <li>▪ Soil contamination</li> <li>▪ Air pollution, odor</li> <li>▪ Health hazards</li> <li>▪ Aesthetic issues</li> </ul>	<p>Solid waste management plan will be implemented and following mitigation measures will be taken:</p> <ul style="list-style-type: none"> <li>▪ Only municipal solid waste will be produced which will be segregated and disposed off using environment friendly techniques</li> <li>▪ Area supervisor will mark the quantity/weight and nature of the material on the drums and logbook.</li> <li>▪ Training will be provided to personnel for identification, segregation, and management of waste.</li> </ul>	Proponent & Contractor
5	Occupational Health and Safety	<ul style="list-style-type: none"> <li>▪ Health problems or immediate risk may take place.</li> <li>▪ Occupational health of workers and community may be affected.</li> </ul>	<ul style="list-style-type: none"> <li>▪ Providing basic medical training, safety training to work staff and basic medical service during operations.</li> <li>▪ Firefighting equipment, safe storage of hazardous material, first aid, security, fencing, and contingency measures in case of accidents.</li> <li>▪ Provision of adequate sanitation, washing, cooking and dormitory facilities including light up to satisfaction;</li> </ul>	Proponent & Contractor

			<ul style="list-style-type: none"><li>▪ Adequate signage, safety cones, lightning devices, barriers, yellow tape and persons with flags.</li><li>▪ Adequate signage, safety cones, lightning devices, barriers, yellow tape and persons with flags during operations.</li></ul>	
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**9.5 SCHEDULE OF IMPLEMENTATION AND ENVIRONMENTAL BUDGET**

**9.5.1 SCHEDULE OF IMPLEMENTATION**

This project will be completed in 03 months after getting Environmental Approval. The total cost of the project is **PKR 100 million approx.** which includes; the cost of civil work, purchase of machinery and its installation, implementation of mitigation measures, site rehabilitation, etc.

**9.5.2 ENVIRONMENTAL BUDGET**

Environmental budget will be allocated for protection of environment. PKR 1.0 million will be allocated as environmental budget in both constructional and operational phase of project.

**Table 12: Cost breakup of environmental budget**

Constructional Phase		
Serial No.	Activity	Environmental Budget
1.	Air Quality Monitoring/Emission monitoring	Pkr/- 200,000
2.	Noise Monition	Pkr/- 50,000
3.	Waste Water Monitoring	Pkr/- 200,000
4.	Fire Safety	Pkr/- 200,000
5.	PPE's	Pkr/- 50,000
6.	Potential Environment Enhancement Measures	Pkr/- 200,000
Total		<b>Pkr/- 100,000,0</b>
Operational Phase		
Serial No.	Activity	Environmental Budget
1.	Air Quality Monitoring/Emission monitoring	Pkr/- 200,000
2.	Noise Monition	Pkr/- 50,000

3.	Waste Water Monitoring	Pkr/- 200,000
4.	Fire Safety	Pkr/- 200,000
5.	PPE's	Pkr/- 50,000
6.	Potential Environment Enhancement Measures	Pkr/- 200,000

<b>Total</b>	<b>Pkr/- 100,000,0</b>
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### 9.6 ENVIRONMENTAL MANAGEMENT TEAM ALONG WITH THEIR ROLES AND RESPONSIBILITIES

Proponent shall hire environmental management team in operational phase of project. The roles and responsibilities of environmental management team are given below in table.

**Table 13: Roles & responsibilities of environmental management team**

Roles and Responsibilities		
Sr#	Concerned Persons	Duties
1	The Project Manager (Proponent)	<p>Following will be the responsibilities of the Project Proponent:</p> <ul style="list-style-type: none"> <li>▪ Ensure that the contractor is aware of all specifications, legal constraints, standards and procedures pertaining to the project specifically with regards to environment.</li> <li>▪ Ensure that all stipulations within the EMMP are communicated and adhered to by contractor(s)</li> <li>▪ Monitor the implementation of the EMMP throughout the project by means of site inspections and meetings. This will be documented as part of the minutes of the site meeting documents</li> </ul>

- 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 proponent is expected to continually monitor and improve the overall performance of their operation

4 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
- Health and safety risk assessments
- Decisions are made about the measures to be taken to eliminate or control these risks
- 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 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

### 9.7 PROPOSED MONITORING PROGRAM TO ASSESS PERFORMANCE OR OUTPUT OF EMP

For effective monitoring, management and documentation of the environmental performance during the construction and operational phase of the project, environmental matters will be discussed during meetings held on-site. Environmental concerns raised during the meetings will be mitigated after discussions between project proponent and the contractors. Any issues that require attention of project proponent higher management will communicate to them for action. Project proponent and its contractors will ensure that the communication and documentation requirements specified in the EMP are fulfilled during the project.

Environmental monitoring can be categorized into two types; 1) compliance monitoring and 2) effects monitoring. The environmental monitoring program is summarized in **Table 17** which identify the roles and responsibilities of project monitoring, further described in detail in following section

### 9.8 COMPLIANCE MONITORING

Compliance monitoring will be carried out to ensure compliance with the requirements of the EIA. The objectives of the EIA compliance monitoring will be to:

- Systematically observe the activities undertaken by the contractors or any other person associated with the project.
- Verify that the activities are undertaken in compliance with the EIA and other conditions

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## ENVIRONMENTAL MANAGEMENT AND MONITORING PROGRAM

identified by project proponent.

- Document and communicate the observations to the concerned person(s) of project proponent so that any corrective measures, if required, can be taken timely.
- Maintain a record of all incidents of environmental significance and related actions and corrective measures.

Compliance monitoring will be the responsibility of all teams involved in the project activities i.e. project proponent and the contractors. Project proponent staff and contractors will carry out the inspections on a set frequency.

### 9.9 EFFECTS MONITORING

To monitor actual impacts of the project on selected sensitive receptors so that impacts not anticipated in the EIA or impacts which exceed the levels anticipated in the EIA can be identified and appropriate mitigation measures can be adopted in time. This objective will be achieved through effects monitoring. Considering the environmental conditions of the project area and the assessment of potential impacts of the project made in the EIA, the following environmental parameters will be monitored at identified locations.

**Air Quality Monitoring** – Air quality monitoring will be done during the construction and operation phase of the project at the representative locations. Ambient air quality parameters will include NOX, SOX, CO, PM10, and Smoke.

**Water Quality Monitoring** – Ground and surface water quality monitoring will be done during the construction and operation phase of the project at the representative locations.

**Groundwater Quality Parameters:** Total Coliforms, Total Colonial Count, E-Coli, pH, TDS, Total Hardness, Nitrate, Chloride, Fluoride, Colour, Manganese, Aluminium, Chromium, Cadmium, Boron, Barium, Antimony, Arsenic, Cyanide, Mercury, Nickel.

**Wastewater Quality Parameters:** pH, DO, TSS, Alkalinity, BOD5, COD, Turbidity.

**Noise Monitoring** - The monitoring will be carried out at key locations covering all receptors

Table 14: Environmental monitoring plan

Component	Parameters	Monitoring Frequency		Responsibility	
		Construction	Operation	Construction	Operation
Ambient Air Quality	SOx , NOx, CO, PM10, Smoke	Quarterly	As per EPA, Punjab Guidelines	Project Contractor	Proponent
Ground Water Quality	pH, TDS, Chloride, Fluoride, Colour, NO <sub>3</sub> <sup>-</sup> , Selenium, Residual chlorine, Lead, Total hardness, Turbidity, Zinc, Manganese, Aluminium, Chromium, Cadmium, Boron, Barium, Antimony, Aresenic, Cyanide, Mercury, Nickel, Total Coliform, E.Coli, Total count.	Monthly	As per EPA, Punjab Guidelines	Project Contractor	Proponent
Surface & Waste Water Quality	pH, DO, TSS, Alkalinity, BOD5, COD, Turbidity.	Quarterly	As per EPA, Punjab Guidelines	Project Contractor	Proponent
Noise Level	Using noise level meter (minimum dB and maximum dB)	Quarterly	As per EPA, Punjab Guidelines	Project Contractor	Proponent
Occupational Health & Safety	Proper provision of PPEs to workers	Daily	Daily	Project Contractor	Proponent

### 9.10 PROPOSED EMP REPORTING AND REVIEWING PROCEDURES

During construction, EMP reporting and reviewing will be done by the contractor/HSE department. Regular monitoring will be done and reports will be submitted in EPA as per condition of Environmental Approval of construction phase.

- Monitoring reports will be reviewed by EMP team and HSE department
- Photographic records will also be maintained
- Recorded data will be reviewed by supervisory contractor/proponent so that it can be further improved if required.

The implementation of the EMP will be the prime responsibility of the project proponents who designate responsibilities and obligations to their selected contractors and staff. Monitoring, documentation and reporting the compliance components of the EMP will be the responsibility of proponent. Specific responsibilities of key role players are illustrated hereunder:

#### **A. Proponent**

The proponent will be responsible for ensuring overall implementation of the EMP during construction as well as operational stages of the project. The responsibilities of the proponent and the site team supervising the project activities include.

#### Project Manager (Proponent)

- Make sure that all activities are completed according to specifications.
- Certify that work being done by the contractor/s is in accordance to the EMP.
- Make sure that the specific system for environmental management is planned, documented, implemented and maintained through all stages of the project.
- Coordinate with regulatory agencies like TMA and EPA, etc.
- Communicate with local community in order to get time to time feedback of these stakeholders on various social and environmental concerns.
- Make sure liaison between the contractor/s and environmental consultant men to check environmental compliance with EPA requirements.

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### **ENVIRONMENTAL MANAGEMENT AND MONITORING PROGRAM**

**I. Site Supervisor**

- Make sure all work crew are inducted in environmental and emergency procedures and instruct on control measures.
- Direct site activities according to the EMP.
- Monitor operations of the EMP and recommend any necessary changes to the Project Manager (Proponent).
- Make sure all contractors, subcontractors and suppliers have necessary and current certificates of competency.
- Collect delivery certificates for quality assurance.

**II. Supervisor**

- Attend site induction and other training sessions.
- Make sure that procedures are followed.
- Advise site supervisor of any potential or actual breaches of plans.

**III. Work Crew**

- Attend site induction and other training sessions.
- Make sure that procedures are followed.
- Advise site supervisor of any potential or actual breaches of plans.

**B. Contractor**

The Contractor will be responsible for the implementation of all measures necessary to ensure that Proponent's environmental and HSE policies are met. In order to fulfill these requirements Contractor will carry out the following;

- Implement environmental good practice measures outlined in the mitigation measures.
- Provide, to extent practicable, environmental training to the work force and promote environmental awareness.
- Coordinate with local authorities as appropriate.
- Advise site supervisor of any violations of EMP.
- Facilitate consultants during environmental monitoring.

### **C. Consultant**

The principal responsibilities of the Consultant include:

- Coordination with provincial and local officials, community groups, government departments etc. on environmental issues and obtaining the necessary clearances from the regulatory authorities.
- Monitoring of the environmental aspects of project during construction to ensure that the environmental requirements of the contract and the mitigation measures proposed in the EMP are implemented.
- Supervising Contractor preparing environmental input to the progress report
- Developing and conducting environmental training activities for Contractor and the Supervision Consultant staff
- Devise solutions to environmental issues as they arise particularly related to dust, noise levels and other impacts that are in some instances unavoidable. Good construction supervision requires that every effort be made to minimize these impacts.

### **D. EPA**

- The role of EPA is on the apex and includes checking:
- Whether requirements of the conditional NOC awarded by the EPA against EIA report are met.
- The Implementation of mitigation recommendations as given in EIA.
- Approval for starting actual project operations is obtained from EIA.
- Review of audit/monitoring reports prepared internally or by a third party monitoring
- Suggest or order any appropriate solutions if something goes against the given EMP.

#### **9.11 TRAINING NEED**

Environmental training will help to ensure that the requirements of the EIA and EMP are clearly understood and followed by all project personnel throughout the project period. Environmental training will form part of the environmental management system. The training will be directed towards all personnel for general environmental awareness

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### **ENVIRONMENTAL MANAGEMENT AND MONITORING PROGRAM**

**9.12 OBJECTIVES OF THE TRAINING PROGRAM**

The key objective of training program is to ensure that the requirements of the EMP are clearly understood and followed throughout the project. The trainings to the staff will help in communicating environmental related controls specified in the EIA and EMP.

**9.13 OBJECTIVES OF THE TRAINING PROGRAM**

The key objective of training program is to ensure that the requirements of the EMP are clearly understood and followed throughout the project. The trainings to the staff will help in communicating environmental related controls specified in the EIA and EMP.

**9.14 TRAINING SCHEDULE**

The training modules will include air, noise and water pollution monitoring, social awareness, Environmental Laws, Environmental Quality Standards usage of personal protection equipment, and health and safety related issues on the construction site.

The contractor will train all construction workers in basic sanitation and health care issues and in general health and safety matters, and on the specific hazards of their work. Training should also consist of basic hazard awareness, site specific hazards, safe work practices, and emergency procedures for fire, evacuation. A generic scope of the training which covers the requirements of the EIA and the EMP is discussed below in **Table 24** while site contractor will prepare site specific training plan considering these training contents.

**Table 15: Training needs**

Target Audience	Contents	Schedule
Selected management staff of contractor and selected staff	<ul style="list-style-type: none"> <li>▪ Introduction to project EIA and EMP. Key findings of EIA</li> <li>▪ Mitigation measures</li> <li>▪ EMP</li> <li>▪ Social and cultural values of the area.</li> </ul>	Prior to the start of project activities

<p>All site personnel (including locally hired staff)</p>	<ul style="list-style-type: none"> <li>▪ Environmental sensitivity of the project area</li> <li>▪ Waste disposal</li> <li>▪ Community issues/ Social and cultural values</li> </ul>	<p>Prior to the start of project activities</p>
<p>Construction supervisor/ Installation crew</p>	<ul style="list-style-type: none"> <li>▪ EMP communication, documentation and monitoring requirements.</li> <li>▪ Good construction &amp; installation practices.</li> <li>▪ Dust emissions control</li> </ul>	<p>Prior to the start of construction &amp; installation activities</p>
<p>Drivers</p>	<ul style="list-style-type: none"> <li>▪ Safety provision</li> <li>▪ Road access restrictions</li> <li>▪ Dust reduction</li> <li>▪ Waste disposal</li> <li>▪ Emergency response preparedness</li> </ul>	<p>Before and during field operations</p>
<p>Selected staff o</p>	<p>Safety provision Hazardous waste disposal Emergency response preparedness</p>	<p>Prior to start of project operations</p>

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## 10 STAKEHOLDER'S CONSULTATION

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Public consultation refers to the process by which the concerns of local affected persons and others who have plausible stake in impacts assessment 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, 2000 public consultation is mandatory for any socio-environmental study. For this purpose, assessment survey and public consultation sessions held with different stakeholder groups that may be impacted. The consultation process was carried out in accordance with the guidelines laid by EPA, Punjab. The objectives of this process were to:

- Share information with stakeholders on proposed project installation and operation.
- To assess the impacts on the physical, biological, and socio-economic environment.
- Understand stakeholder concerns regarding various aspects of the project.
- Understand the perceptions, assessment of social impacts and concerns of the communities of the project area.
- Find out the awareness level and situation of acceptability to identify any issues for the implementation of said project.
- To invite people to express their views about the positive/negative impacts on their life styles and environment.

This report includes all the comments, which were taken into account in preparing the definitive development concept for the installation of the proposed unit.

### 10.1.1 CONSULTATION MECHANISM

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

By reaching out to a wider segment of the population and using various communication tools such as participatory needs assessment, community consultation meetings, focus group discussions, in-depth interviews, and participatory rural appraisal EIA involved the community in active decision-making. This process will continue even after this EIA has been submitted, as well as during future EIA in which similar tools will be used to create consensus among stakeholders on specific environmental and social issues.

Secondary stakeholder consultations were more formal as they involved government representatives and local organizations, consulted during face-to-face meetings. They were briefed on the EIA process, the project design, and the potential negative and positive impact of the project on the area's environment and communities. It was important not to raise community expectations unnecessarily or unrealistically during the stakeholder consultation meetings in order to avoid undue conflict with community's leaders or local administrators. The issues recorded in the consultation process were examined, validated, and addressed in the EIA report. This section involves communication of possible impacts and concerns with

- Proponents Environmental Management Team
- The responsible authority
- Other departments and agencies
- Environmental Practitioners and experts
- Affected and wider community

### **10.2 PROPONENT'S ENVIRONMENTAL MANAGEMENT TEAM**

Consultation regarding establishment of M/S Ultimate Medical Care Pvt Ltd was done with stakeholders and anticipated impacts were discussed. Concerns of locals, Environmental Practitioners & experts and Government departments were discussed and asked to consider them while construction of above-said project. Locals will be preferred for employment after providing proper training. Mitigations measures mentioned in EMP will be truly implemented.

### **10.3 THE RESPONSIBLE AUTHORITY**

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

#### 10.4 THE OTHER DEPARTMENTS AND AGENCIES

Different Government departments were consulted regarding establishment of proposed project. Government officer 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.

#### 10.5 ENVIRONMENTAL PRACTITIONERS AND EXPERTS

Consultation with Environmental Practitioners and experts was done and following comments and suggestions were observed.

**Table 16: Consultation with environmental practitioners and experts**

Name		Qualification	Comments/suggestions
Ms. Rabiya Mahmood	Ph.D. (scholar)	Environmental Sciences	Following comments are summarized: <ul style="list-style-type: none"> <li>▪ Latest technology must be preferred</li> <li>▪ Regular monitoring should be conducted</li> </ul>
Ms. Nusrat Ehsan	Ph.D. (scholar)	Environmental Sciences	She said that current project must be installed as : <ul style="list-style-type: none"> <li>▪ Import of disposable syringes will be minimized.</li> <li>▪ Good household practices must be practiced</li> </ul>
Mr. Danial Zaib	BS	Environmental Sciences	He said that: <ul style="list-style-type: none"> <li>▪ Locals should be preferred for employment.</li> </ul>

- In case of outsider’s residence must be provided
- Proper mitigation measures must be adopted while construction and operation of this project

**10.6 AFFECTED AND WIDER COMMUNITY**

Social survey was conducted to consult with local community. Their concerns were noticed and discussed with proponent and their team. Majority was in favor of project their details are given below in table.

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

**Table 17: Comments of stakeholders**

Sr No.	Interviewer’s Name	Contact	
1.	Fahim Khan	0345-4166073	<ul style="list-style-type: none"> <li>▪ Wastewater should be properly treated prior to final disposal in nearby drain.</li> <li>▪ Solid waste should be managed effectively by adopting the standard practices of the area.</li> <li>▪ Cleanliness of the area should be ensured.</li> <li>▪ An effective EMMP should be designed and</li> </ul>
2.	Mudddasar Ahmd	0323-7141371	
3.	Mudassar Pervaiz	0302-9383501	
4.	Muhammad Zahid	0304-8141488	
5.	Muhammad Aslam	0345-6032550	
6.	Ghulam Niazi	0300-4577547	
7.	Muhammad Danish	0308-4522737	
8.	Sajjad AHmad	0300-4966961	
9.	Adeel Ahmad	0306-4054157	

10.	Abid Azeem	0333-4598420	enforced with true
11.	Azeem Sarwar	0304-0113595	spirit.
12.	Mudassar Ali	0301-6065885	▪ Health of the workers should be ensured.
13.	Muhammd Jamil	0307-8750545	▪ Plantation should be carried out at extensive scale.
14.	Waseem Masroor	0311-7990673	▪ Construction activity should be carried out during day hours.
15.	Sohail Ahmad	0307-4273364	▪ Noisy activities should be confined.
16.	Muhammad Aslam	0300-8972941	▪ Workers should be hired from local community.
17.	Hussain Ali	0304-8141488	▪ PPE's must be provided to workers
18.	Muhammad Siddique	0300-4577547	▪ Indigenous trees around the facility should be planted to control air pollution.
19.	Amjad Ali	0304-6368671	▪ Safeeda can be planted in the project area as the area is known to be affected by the logging and salinity.
20.	Sabir Mahmood	0300-7987863	
21.	Shakeel Subhani	0343-2920843	
22.	Kareem Niazi	0306-7869122	
23.	Subhan Ali	0301-9356728	
24.	Shahbaz Ahmad	0333-20290431	
25.	Muhammad Shahid	0313-83984235	

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## **11 CONCLUSION AND RECOMMENDATION**

### **11.1 CONCLUSION AND RECOMMENDATIONS**

M/S Ultimate Medical Care Pvt Ltd respects the environment, supports sustainable development and is committed to environmentally sound business practices. This study was carried out to assess the environmental and socioeconomic impacts of the proposed project. The assessment was carried out in keeping with the legislation of Pakistan, as well as national and international guidelines.

Baseline environmental and socioeconomic information was collected from a variety of sources, including reports of previous studies, published literature, and field surveys. The information collected was used to compose profiles of the natural, socioeconomic, and cultural environment likely to be affected by the project.

The proposed activities were reviewed, and an assessment was made of the potential impacts of these activities on the area's natural and socioeconomic environments, using both qualitative and quantitative assessment methods. Where appropriate, mitigation measures were recommended to keep the environmental impacts within acceptable limits.

It was analyzed that most of the aspects related with the proposed project have very minor impacts. It is therefore concluded that if the implementation of all mitigation measures is carried out as described in this report, the anticipated impact of the project on the area's natural and socioeconomic environment will be well within acceptable limits.

Proponent of subject project has expressed strong commitment to protection of the social and natural environment from any potential adverse impact of the project. A preventive maintenance philosophy supported by robust inspection plans and sound operational practices will be adopted to ensure sustainable and sound functioning of the proposed project. Therefore, it is recommended that the competent authority may please be issues Environmental Approval for the operation of this project.

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## 12 APPENDICES

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### 12.1 GLOSSARY

<b>Air Quality</b>	Measurement of the pollutants in the air; a description of healthiness and safety of the atmosphere.
<b>Consultation</b>	Consultation refers to two-way transfer of information or joint discussion between project staff and the affected population. Systematic consultation implies a sustained and rigorous sharing of ideas. Bank experience shows that consultation often yields the best resettlement alternatives, fruitful procedures for continued participation, and independent information on actual conditions for implementation.
<b>Closure</b>	The action of making new or secret information known.
<b>Env. Management</b>	Attempt to control human impact on and interaction with the environment in order to preserve natural resources
<b>Effluent</b>	Wastewater - treated or untreated - that flows out of a treatment plant, sewer, or industrial outfall. Generally, refers to wastes discharged into surface waters.
<b>Evaluation</b>	The making of a judgment about the amount, number, or value of something; assessment.
<b>Geology</b>	A science that studies rocks, layers of soil, etc., in order to learn about the history of the Earth and its life.
<b>Ground Water</b>	Aquifers currently being used as a source of drinking water or those capable of supplying a public water system. They have a total dissolved solid content of 10,000 milligrams per liter or less and are not "exempted aquifers."
<b>Hazardous</b>	Substance or material, which could adversely affect the safety of the public, handlers or carriers during transportation.
<b>Household</b>	People residing under one roof, using the same hearth and operating as a single economic unit.
<b>Impact</b>	Effect on someone or something

<b>Jurisdiction</b>	The extent of the power to make legal decisions and judgments.
<b>Land Acquisition</b>	<p>The process whereby a person is compelled by a public agency to cede all or part of the land a person owns or possesses, to the ownership and possession of that agency, for public purpose in return for compensation</p> <p>Supervising activities in progress to ensure they are on-course and on schedule in meeting the objectives and performance targets.</p>
<b>Occupational Health</b>	Maintenance of the highest degree of physical, mental and social wellbeing of workers in all occupations by preventing departures from health, controlling risks and the adaptation of work to people, and people to their jobs.
<b>pH</b>	pH is a measure of how acidic/basic water is.
<b>Project Area</b>	The area specified by the funding and/or implementing agency according to the Official Gazette Notification and includes the areas within the administrative limits of the Federal or a Provincial Government.
<b>Proponent</b>	A person who advocates a theory, proposal, or course of action.
<b>Capacity</b>	The volume of products or services that can be produced by an enterprise using current resources.
<b>Quality Control</b>	A system of maintaining standards in manufactured products by testing a sample of the output against the specification.
<b>Rehabilitation</b>	Include all compensatory measures to re-establish; at least lost incomes, livelihoods, living and social systems. It does not include the payment of compensation for required assets.
<b>Scope</b>	The extent of the area or subject matter that something deals with or to which it is relevant.
<b>Social Environment</b>	It includes the culture that the individual was educated or lives in, and the people and institutions with whom they interact.
<b>Stakeholders</b>	Include affected persons and communities, proponents, private and public businesses, NGOs, host communities and EPA.
<b>Topography</b>	Details of the surface features of land. It includes the mountains, hills,

creeks, and other bumps and lumps on a particular hunk of earth.

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## 12.2 LIST OF ABBREVIATIONS

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EIA	Environmental Impact Assessment
EMMP	Environment Mitigation and Monitoring Plan
EMP	Environmental Management Plan
EPAs	Environmental Protection Agencies
PEPC	Pakistan Environmental Protection Council
NEP	National Environmental Policy
IEE	Initial Environmental Examination
NGO's	Non–Government Organizations
NOC	No Objection Certificate
O&M	Operation and Maintenance
PEPA	Pakistan Environmental Protection Act 1997
PEQS	Punjab Environmental Quality Standards
CBD	Convention on Biological Diversity
CITES	Convention on International Trade in Endangered Species
IUCN	International Union for Conservation of Nature
UNDP	United Nations Development Programme
DO	District Officer
PKR	Pak Rupees
hr	Hour
mg/l	Milligram per Litre
mg/m <sup>3</sup>	Milligram per Cubic Meter
PPE	Personal Protective Equipment
QC	Quality Control

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SEO	Site Environment Officer
SH&E	Safety Health & Environment
APHA	American Public Health Association
BOD	Biochemical Oxygen Demand
COD	Chemical Oxygen Demand
SPM	Suspended Particulate Matter
WWTP	Wastewater Treatment Plant
SMART	Self-Monitoring and Reporting Tool
NO <sub>x</sub>	Oxides of Nitrogen
SO <sub>x</sub>	Oxides of Sulphur
NCS	National Conservation Strategy
PM	Particulate Matter

### 12.3 LIST OF INDIVIDUALS AND ORGANIZATIONS CONSULTED ALONG WITH THEIR WRITTEN FEEDBACK

Sr No.	Interviewer's Name	Contact	
26.	Fahim Khan	0345-4166073	<p>The survey in the study area following concerns of the local community were noted:</p> <ul style="list-style-type: none"> <li>▪ Wastewater should be properly treated prior to final disposal in nearby drain.</li> <li>▪ Solid waste should be managed effectively by adopting the standard practices of the area.</li> <li>▪ Cleanliness of the area should be ensured.</li> <li>▪ An effective EMMP should be designed and enforced with true spirit.</li> <li>▪ Health of the workers should be ensured.</li> </ul>
27.	Mudddasar Ahmd	0323-7141371	
28.	Mudassar Pervaiz	0302-9383501	
29.	Muhammad Zahid	0304-8141488	
30.	Muhammad Aslam	0345-6032550	
31.	Ghulam Niazi	0300-4577547	
32.	Muhammad Danish	0308-4522737	
33.	Sajjad AHmad	0300-4966961	
34.	Adeel Ahmad	0306-4054157	
35.	Abid Azeem	0333-4598420	
36.	Azeem Sarwar	0304-0113595	
37.	Mudassar Ali	0301-6065885	
38.	Muhammd Jamil	0307-8750545	
39.	Waseem Masroor	0311-7990673	
40.	Sohail Ahmad	0307-4273364	
41.	Muhammad Aslam	0300-8972941	

42.	Hussain Ali	0304-8141488	▪ Plantation should be carried out at extensive scale.
43.	Muhammad Siddique	0300-4577547	
44.	Amjad Ali	0304-6368671	▪ Construction activity should be carried out during day hours.
45.	Sabir Mahmood	0300-7987863	
46.	Shakeel Subhani	0343-2920843	▪ Noisy activities should be confined.
47.	Kareem Niazi	0306-7869122	
48.	Subhan Ali	0301-9356728	▪ Workers should be hired from local community.
49.	Shahbaz Ahmad	0333-20290431	
50.	Muhammad Shahid	0313-83984235	▪ 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 is known to be affected by the logging and salinity. ▪ Removal of shrubs and bushes should be avoided to the extent possible.

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## 12.4 SOURCES OF DATA AND FULL LIST OF ALL REFERENCE MATERIAL USED

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1. Field surveys,
2. Government site
3. Stakeholder consultation
4. Proponent
5. Published articles

### 12.5 TERMS OF REFERENCES

The consultants is required to carry out an environmental impact assessment 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), 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.

## 12.6 LIST OF NAME, QUALIFICATION AND ROLES OF TEAM MEMBERS CARRYING OUT IN IEE/EIA STUDY

Sr.No.	Name	Designation	Role and Responsibility
1.	Dr. Mateen Shafqat	Peer Advisor	Technical Peer Review
2.	Mr. Kamal Ahmed Cheema	Lead Environmentalist	Technical Peer review
3.	Ms. Maham Ayesha	Manager Operations	Legal framework review and Stakeholder consultation IEE/EIA Expert, Environmental & Social Baseline, Report Writing.
4.	Arslan Iqbal	Environmentalist	Project Coordination and management, Impact Assessment and Mitigation Measures, Environmental Management Plan, Technical Report Writing.
5.	Mr. Jawad Shafiqe	Zooligist	Legal framework review and Stakeholder consultation, IEE/EIA Expert, Environmental & Social Baseline, Report Writing.
6.	Ms. Amna Hafeez	Environmentalist & GIS Expert	Legal framework review and Stakeholder consultation, IEE/EIA Expert, Environmental & Social Baseline, Report Writing. Project GIS Mapping
7.	Ms. Aishah Mushtaq	GIS Expert	Legal framework review and Stakeholder consultation, IEE/EIA Expert, Environmental & Social Baseline, Report Writing.

## 12.7 APPROVALS FROM OTHER CONCERNED DEPARTMENTS

Attached.

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APPENDICES