EXECUTIVE SUMMARY

ES.1 INTRODUCTION

Project is Pak Alumex Industries (Aluminum Manufacturing Plant) situated at Chak Number 95 / JB Near Korian Stop, Painsera Road, Tehsil Gojra, District Toba Tek Singh. Capacity of the unit is 50 tons per batch.

The proponent intends to work for the safety and security of the nature by improving the national assets. The input of raw material in any manufacturing or processing industry will provide benefits to many stakeholders that will finally add the national income improvement after feeding many workers.

ES.2 LOCATION OF PROJECT

Pak Alumex Industries (Aluminum Manufacturing Plant) is located at Chak Number 95 / JB Near Korian Stop, Painsera Road, Tehsil Gojra, District Toba Tek Singh

Plan layout of the project is annexed at the end of the report.

ES.3 PROJECT TITLE

PAK ALUMEX INDUSTRIES
(Aluminum Manufacturing Plant)
Chak Number 95 / JB Near Korian Stop, Painsera Road,
Tehsil Gojra, District Toba Tek Singh

ES.4 NAME OF THE PROPONENT

Zain Ul Abadeen

Owner / Director

Pak Alumex Industries

(Aluminum Manufacturing Plant)

Chak Number 95 / JB Near Korian Stop,

Painsera Road,

Tehsil Gojra, District Toba Tek Singh

Brief Activities

Project is for installation of Aluminum Manufacturing Plant. The proponent will carry out all necessary acts and activities in relation to the construction and the subsequent operation including procurement and producers to different vendors. The proponent will take all necessary steps for hiring services of various personal staffs pertaining to project.

ES.5 NAME OF THE ORGANIZATION PREPARING THE REPORT

In keeping view with the regulatory requirement of the country, management engaged **Environmental and Social Technical Services (ESTS)** to undertake an Environmental Impact Assessment (EIA) Report of the project.

ES.6 BRIEF OUTLINE OF THE PROJECT

The project "Pak Alumex Industries (Aluminum Manufacturing Plant)" is related to Installation of Aluminum Manufacturing Plant. Manufacturing **capacity is 50Tons/Day**. The developmental activities will mainly involve civil, mechanical and electrical works associated with the installation of the unit and thereafter operations of the facilities. The main activities to be carried out in the development of the project include excavations or earth works, installation of the furnace and pump and pipe works.

The project will operate in compliance with Punjab Environmental Quality Standards (PEQS).

- Noise pollution should be controlled or managed properly by providing green barriers where possible.

- It should be done by extensive vegetation of trees and plants.
- Vegetation should be done in the surrounding area as it can absorb noise and air pollution.
- All workers should be provided with ear covering and spend glasses during working.
- Medical checkup of all workers should be done regularly after a specific time period (may be quarterly).
- Extensive plantation shall be done to improve/enhance the environmental scenario of the processing unit.

According to the Environment Protection Agency, Government of the Punjab, Lahore the project lie under the category of Schedule II of IEE/ EIA Regulation 2022 requiring Environmental Impact Assessment (EIA). Further, the client is required to fulfill the legal requirements of the Section-12 of the Pakistan Environmental Protection Act 1997.

ES.7 MAJOR IMPACTS

The overall impacts of the project can be considered positive. However, it may pose some minor and moderate negative social and environmental impacts which will require proper mitigation measures during construction phase.

Therefore, the intended measures are directed towards mitigation of the identified adverse impacts. Because of generation of small amount of wastes, there will not be any significant environmental and social impacts of the project facility.

- Likelihood of relatively higher local dust levels from engine exhausts of the vehicles employed for transportation of materials and machinery to the project site.

- Likelihood of higher local levels of drag dust blowing off wheels of the moving vehicles on the unpaved and poorly maintained roadway to the project site.
- Likelihood of backend impacts relating to consumption of natural resources including water for various process and non-process operations.
- Likelihood of impacts relating to generation of sanitation wastewater from toilets and washrooms at the project facilities only if disposal improper.
- Likelihood of impacts relating to disorderly stacking of the various building materials.
- Likelihood of various socio-cultural impacts relating to rights of easement, ventilation and opportunities of job and employment. Similarly, there could be frictions with the locals from interaction of the laborers with the local community.
- Likelihood of impacts relating to occupational health, worksite safety and non-insurance of the workers against the risks of on job injury and resultant consequences.

There will be some generation of the ordinary food-based wastes and food residues resulting from consumption of food and eatables by the workers taking their meals at the project site. Additionally, there will be generation of sanitation wastewater from the worksite toilets at the project premises. A brief description of the various likely impacts follows hereunder:

- **Impacts of Land Use Change:** The project land belongs to the Proponent. It is already lying fallow. Project site is available for the project .Therefore, construction of the project would not involve any land use change, (***Activity devoid of any environmental or social impact***).
- **Loss of Livelihood and Structural Damages:** Construction of the project on the available land will not involve any loss of livelihoods of the neighboring residents, landowners or farmers. (***Activity devoid of any environmental or social Impact***).

- **Cutting and Removal of Trees and Crops:** No impacts related to cutting or removal of trees and crops, as the project will be constructed on vacant clear plot. (***Aspect / Activity devoid of any adverse environmental or social impacts***).
- **Impeachment of the Easement Rights of the Local Community:** No impacts related to impeachment of the easement rights of the neighbours (such as blockage of sunlight, aeration and ventilation), as the project will be constructed deep inside the earmarked land. (***Aspect/Activity devoid of any adverse environmental or social impacts***).
- **Impacts on Groundwater:** Very minimal and insignificant impacts relating to abstraction and consumption of groundwater. Additionally, small amounts of freshwater will be required for drinking by the staff employed at the facility premises or sanitation needs. (***Aspect/Activity devoid of any adverse environmental or social impacts***)
- **Impacts on Surface Water:** No impacts on the nearby surface water as the construction and the subsequent operation of the project will be devoid of any interaction with the surface water of the area. (***Aspect/Activity devoid of any adverse environmental or social impacts***)
- **Impacts of Inadequate Treatment and Disposal of Wastewaters:** No impacts related to generation, inadequate disposal and treatment of the wastewater as the project activities will not generate any wastewater or effluents at all. Except small amount of sanitation wastewater. (***Aspect/Activity devoid of any adverse environmental or social impacts***)
- **Impacts of Inadequate Disposal of the MSW:** No impacts related to generation and disposal of municipal solid wastes (MSW), as there will not be any generation of MSW at the project facility at all. The ordinary food will not produce any adverse environmental impacts because of extremely small amount. (***Aspect/Activity devoid of any adverse environmental or social impacts***)
- **Likelihood of Worksite Risks and Personal Injuries:** Non-observance of the standard procedures and steps for carrying out a particular activity and non-

compliance of the precautionary measures (like smoking on worksite, wearing loose cloths and avoiding to put on safety equipment) may render the workers prone to higher chances of worksite and industrial accidents. All workers performing various handling activities must put on safety equipment. (***Aspect/Activity devoid of any adverse environmental or social impacts***)

- **Likelihood of Land Instability and Land Sliding:** There will be no likelihood of soil instability and land sliding from any of the activities at the project facility as the site is prone to these impacts. (***Aspect/Activity devoid of any adverse environmental or social impacts***)
- **Impacts on Local Ecology, Biodiversity and the Habitat:** No Impacts as this aspect is totally irrelevant to the construction of project and because of its geophysical location. There will be no likelihood of damage to the local flora and fauna. (***Aspect/Activity devoid of any adverse environmental or social impacts***)
- **Displacement & Resettlement Issues:** Onsite activities relating to project will not cause displacement of any persons or loss of the workplace or above. No concern to this impact. (***Aspect/Activity devoid of any adverse environmental or social impacts***)
- **Social and Cultural Issues:** The project will not interact with any of the nearby local communities. (***Aspect/Activity devoid of any adverse environmental or social impacts***)

A detailed account of the genesis of the above-referred adverse impacts, their potentiality to affect the ambient environment and the measures for their mitigations has been presented in this EIA Report. However, it would be suffice here to state that if the project activities at the site are carried out in a sustainable manner and in accordance with recommendations of the Environmental Management Plan EMP and other relevant mitigation measures, as are given in this EIA study; then the majority of these adverse impacts would become insignificant and of no relevance at all.

The environmental impacts associated with this project will not have significant negative impacts on the environment, as plant will only operate for project.

ES.8 RECOMMENDATIONS FOR MITIGATION MEASURES

The report details a set of comprehensive mitigation measures and strategies for avoiding and countering the adverse environmental and social impacts of the project. In addition to the preventive measures for warding off the adverse impacts, corrective measures have also been suggested for all and various project activities at the facility site to address the adverse impacts .The report contains a set of comprehensive mitigation measures and the strategies for avoiding or addressing the adverse environmental impacts of the project's construction and subsequent operation phases.

The mitigations relating to construction phase of the project included the following:

- Preparation of the tailored checklists for checking propriety of each and every activity in a systematic manner
- Identification of alternate routes in case of temporary blockade of the approach road.
- Isolating the worksite with some dense material.
- Orderly stockpiling of the construction materials.
- Preferring to carrying out noisy activities during daytime hours, and
- Ensuring worksite safety during installation of machinery and equipment, etc

ES.9 PROPOSED MONITORING

Monitoring Program	Monitoring Frequency
AIR: • Monitoring of ambient air quality	• Periodic or continuous if

Monitoring Program	Monitoring Frequency
	critical
WATER: • pH and total suspended solids • Quality of the drinking water	• Continuous • Periodic or continuous if critical

ES.10 RESTORATION AND REHABILITATION PLAN

All possible precautions will be taken to prevent an untoward incident in terms of life and property losses. On completion of the project, all waste will be removed from the site in order to maintain aesthetics of the area. All measures will be undertaken for ensuring occupational safety, security and clean environment during the working hours. Vegetation andlandscaping will be done by the proponent after the completion of construction of the project.

Restoration

To limit the disturbance to the public caused by excavation and other construction works, restoration will be made a part of the activities to be performed by the Construction Contractors. Proponent has bound the Construction Contractors to restore the dismantled roads (if any), pavements and brick soling structures in the construction sites as well as the temporary construction sites.

Rehabilitation Plan

Project area is situated along rural road. Following rehabilitation / improvement activities are involved during the execution of work.

- Dismantling and removing existing sites (if any).
- Depth from ground level, including cutting, leveling of ground to correct grade and excavation for siting of machinery etc.
- Cement concrete plain including, placing compacting finishing.

ES.11 ENVIRONMENTAL, SOCIAL & DISASTER MANAGEMENT PLAN (ESDMP)

The environmental management plan (EMP), provides a mechanism for implementing the preventive and the corrective mitigation measures along with list of the authorities and the focal persons responsible for their implementation. The mitigation guidelines are the result of lengthy deliberations over various issues made with the relevant stakeholders and the regulatory agencies. The primary objective of the EMP is to prevent and attenuate the adverse impacts to an acceptable level by adopting suitable administrative and or technical options.

CHAPTER – 1

INTRODUCTION

1.1 INTRODUCTION

This Report presents Environmental Impact Assessment (EIA) Study for the project aluminum manufacturing unit having production capacity of 50 tons per batch. This study has been carried out to estimate the likely environmental and social impacts during operation and identify proper mitigation measures for reducing the adverse impacts on environment.

1.2 TERMS OF REFERENCE

To prepare Environmental Impact Assessment (EIA), **Terms of References** are;

(a) To provide the Environmental and Social Baseline conditions of the project area.

(b) To identify adverse Environmental and Social impacts.

(c) To develop an Environmental Management Plan for adverse environmental impacts

(d) To prepare Environmental Impact Assessment Report (EIA) as per IEE / EIA guidelines 2022

1.3 PURPOSE OF THE REPORT

The main objectives of this Environmental Impact Assessment (EIA) are to identify the baseline environmental, biophysical and socio-economic conditions, to suggest project alternatives including alternate sites, and to study the potential impacts along with formulation of suitable mitigation measures for an environmental friendly implementation of the project and around the project area. The purpose of the

Environmental Impact Assessment (EIA) study is to identify the possible beneficial and adverse environmental impacts as presently envisaged and propose the practical mitigation measures to be implemented during construction of the Project to minimize the negative impacts of the unit.

The specific objectives of the Environmental Impact Assessment (EIA) are to:

a. To provide the environmental and social baseline conditions of the project area.

b. Identify adverse environmental and social impacts associated with project and to propose mitigation measures for potential impacts of the project during the construction and operation phases.

c. To develop an Environmental Management Plan (EMP) for adverse environmental impacts and to enhance the capacity building.

1.4 IDENTIFICATION OF PROJECT AND PROPONENT

1.4.1 IDENTIFICATION OF PROJECT

Pak Alumex Industries (Aluminum Manufacturing Plant) will be producing quality products and specialized items for durable architectural aluminum in construction sector of Pakistan. The company has established an iconic reputation among its national and international customers by providing them highly advanced and technologically latest parts with sheer excellence and vigilance. Its highly trained professionals, staff members under the guidance of top management, aim to ensure such brilliance by expanding company's business around the globe in near future.

Pak Alumex Industries (Aluminum Manufacturing Plant), covering areas of 44 kanal 15 marla, possesses state of the art technology of manufacturing aluminum profiles and these facilities bring Pak Alumex Industries (Aluminum Manufacturing Plant) far ahead than its contemporaries. Its sophisticated research and development department provides matchless activities to understand the stimulated demands of market by every passing day. Undoubtedly, Pak Alumex Industries (Aluminum Manufacturing Plant) is

considered as an epitome of excellence among the Automotive parts manufacturers industry of Pakistan.

1.4.2 IDENTIFICATION OF PROJECT PROPONENT

ZAIN UL ABADEEN
Owner / Director

Pak Alumex Industries

(Aluminum Manufacturing Plant)

Chak Number 95 / JB Near Korian Stop,

Painsera Road, Tehsil Gojra, District Toba Tek Singh

1.5 DETAILS OF CONSULTANT

Environmental And Social Technical Services (Regd.) has prepared and submitted this Environmental Impact Assessment (EIA) report.

Name of organization	**Environmental and Social Technical Services (ESTS)**
Email	hsb.obaid@gmail.com
Address	215, B-Block, Faisal Town, Lahore Pakistan

List of members preparing Environmental Impact Assessment (EIA) is annexed.

1.6 BRIEF DESCRIPTION OF NATURE SIZE AND LOCATION OF PROJECT

Project is Aluminum Manufacturing Plant situated at Chak Number 95 / JB Near Korian Stop, Painsera Road, Tehsil Gojra, District Toba Tek Singh. Capacity of the unit is 50 tons per batch. Design layout annexed at the end of the report.

1.7 REPORT STRUCTURE

The Report is structured as follows:

Chapter 1: Introduction of the Project.

Chapter 2: Describes the Legislative and Policy Framework Governing the Project;

Chapter 3: Provides an overall Description of the Project in the light of Master Plan;

Chapter 4: Provides general Environmental baseline conditions of the Project;

Chapter 5: Provides general Social baseline conditions of the Project;

Chapter 6: Assesses the overall Environmental Impact of the Project and Recommends Appropriate Mitigation Measures.

Chapter 7: Environmental Management and Monitoring Program, defines responsibilities of the Project proponent, contractor(s) and other key players; specifies supervision and monitoring mechanisms and parameters.

Chapter 8: Consideration of the project alternatives

Chapter 9: Stakeholders Consultations

Chapter 10: Conclusions and Recommendations

EIA REPORT PREPARATION TEAM

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2.	**Mr. Obaid ur Rehman**	Environmentalist / Ecologist
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5.	**Ms. Yalnaz Bashir**	Jr. Environmental Engineer
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8.	**Secretariat Staff/ Computer Experts**	

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CHAPTER – 2

POLICY, LEGAL AND ADMINISTRATIVE FRAMEWORK

This section provides an overview of the policy framework and national legislation that applies to the project. The project is expected to comply with all national legislation relating to environment in Pakistan, and to obtain all the regulatory clearances required.

2.1 NATIONAL POLICY AND ADMINISTRATIVE FRAMEWORK

The Pakistan National Conservation Strategy (NCS) that was approved by the federal cabinet in March 1992 is the principal policy document on environmental issues in the country (EUAD/ IUCN, 1992). The NCS outlines the country's primary approach towards encouraging sustainable development, conserving natural resources, and improving efficiency in the use and management of resources. The NCS has 68 specific programs in 14 core areas in which policy intervention is considered crucial for the preservation of Pakistan's natural and physical environment. The core areas that are relevant in the context of the project are pollution prevention and abatement, restoration of rangelands, increasing energy efficiency, conserving biodiversity, supporting forestry and plantations, and the preservation of cultural heritage.

Two organizations, the Pakistan Environmental Protection Council (PEPC) and the Pakistan Environmental Protection Agency (Pak-EPA), are primarily responsible for administering the provisions of the Pakistan Environmental Protection Act, promulgated by the Government of Pakistan in 1997. The PEPC oversees the functioning of the Pak-EPA. Its members include representatives of the government, industry, non-governmental organizations, and the private sector. The Pak-EPA is required to ensure compliance with the PEQS and establish monitoring and evaluation systems. As the primary implementing agency in the hierarchy, it is responsible for

identifying the need for, as well as initiating legislation whenever necessary. The Pak-EPA is also authorized to delegate powers to its provincial counterparts, the provincial EPAs (environmental protection agencies). One of the functions delegated by the Pak-EPA to provincial EPAs is the review and approval of environmental assessment reports of projects undertaken in their respective jurisdictions.

2.1.1 Pakistan Environmental Protection Act, 1997

The Pakistan Environmental Protection Act, 1997 (1997 Act) empowers the Pak-EPA to:

- Delegate powers, including those of environmental assessment, to the provincial EPAs.
- Identify categories of projects to which the IEE/EIA provision will apply.
- Develop guidelines for conducting initial environmental examinations (IEE) and EIAs procedures for the submission, review and approval of the same.
- Develop environmental emission standards for parameters such as air, water and noise.
- Enforce the provisions of the Act through environmental protection orders and environmental tribunals headed by magistrates with wide-ranging powers, including the right to fine violators of the Act.

Under the provisions of the 1997 Act, the Pak-EPA has empowered four provincial EPAs to manage the environmental concerns of their respective provinces. The provincial EPAs can frame environmental regulations tailored to the requirements of their province, provided these regulations meet or exceed the minimum standards set by the Pak-EPA. Provincial EPAs are required to review and approve EIAs of all development projects undertaken in their respective provinces, including those projects implemented by federal agencies.

- **Regulations for Environmental Assessment**

Under Section 12 (and subsequent amendment) of the 1997 Act, a project falling under any category specified in Schedule I (SRO 339 (10/2000), requires the proponent to file an IEE with the federal agency concerned (the Pak-EPA). Projects falling under any category specified in Schedule II require the proponent to file an EIA with the federal agency. Within ten working days of the IEE or EIA having been deposited, the federal agency will confirm that the document submitted is complete for the purpose of review. During this time, should the federal agency require the proponent to submit any additional information, it will return the IEE or EIA to the proponent for revision, clearly listing those aspects that need further discussion. Subsequently, the federal agency shall make every effort to complete an IEE review within 45 days and an EIA review within 90 days of filing.

Recognizing that the Pak-EPA has delegated powers to the provincial EPAs to enforce the provisions of the 1997 Act, an EIA must be submitted to one of the relevant Provincial EPA based on the location of the project.

At the time of application, the project proponent is also required to pay a specified fee to the EPAs concerned.

- **Guidelines for Environmental Assessment**

The Pak-EPA has published a set of environmental guidelines for conducting environmental assessments and the environmental management of different types of development projects. The guidelines that are relevant to the project are listed below, followed by comments on their relevance to the project:

Guidelines for the Preparation and Review of Environmental Reports, Pakistan Environmental Protection Agency, 1997

The guidelines on the preparation and review of environmental reports target the project proponents, and specify:

- The nature of the information to be included in environmental reports
- The minimum qualifications of the IEE/EIA conductors appointed
- The need to incorporate suitable mitigation measures at every stage of project implementation
- The need to specify monitoring procedures.

The terms of reference for the reports are to be prepared by the project proponents themselves. The report must contain baseline data on the project area, a detailed assessment thereof, and mitigation measures.

- Guidelines for Public Consultation, Pakistan Environmental Protection Agency, May 1997

These guidelines deal with possible approaches to public consultation and techniques for designing an effective program of consultation that reaches out to all major stakeholders and ensures that their concerns are incorporated in any impact assessment study.

- Sectoral Guidelines: Pakistan Environmental Assessment Procedures, Pakistan Environmental Protection Agency, October 1997
- The guidelines for 'Manufacturing plant' are structured to assist in identifying key environmental issues related to Manufacturing Plant, as well as the various mitigation measures and alternatives that should be considered and applied accordingly.

2.1.2 Punjab Environmental Quality Standards, 2000

The Punjab Environmental Quality Standards (PEQS), 2000 specify the following standards:

- Maximum allowable concentration of pollutants (32 parameters) in municipal and liquid industrial effluents discharged into inland waters, sewage treatment facilities, and the sea (three separate sets of numbers)
- Maximum allowable concentration of pollutants (16 parameters) in gaseous emissions from industrial sources
- Maximum allowable concentration of pollutants (two parameters) in gaseous emissions from vehicle exhaust and noise emission from vehicles.
- Maximum allowable noise levels from vehicles.

These standards also apply to the gaseous emissions and liquid effluents generated by generator, process waste etc. The standards for vehicles will apply during the construction as well as operation phase of the project. Standards for air quality have not been prescribed as yet.

2.1.3 National Resettlement Policy and Ordinance

There is no such kind of land acquisition or resettlement of Project Affected Persons. Therefore, no further details have been discussed.

The provisions of the Draft Resettlement Policy are consistent with the requirements of the World Bank's OP 4.12 on involuntary resettlement. After becoming law, these provisions will apply when addressing the resettlement issues that arise in the project.

2.2 INTERACTION WITH OTHER AGENCIES

The client is responsible for ensuring that the project complies with the laws and regulations controlling the environmental concerns. This chapter describes the nature of the relationship between the client and line departments concerned.

2.2.1 Federal and Provincial EPAs

The client will be responsible for providing the complete environmental documentation required by the Pak-EPA, and Punjab Environmental Protection Department (EPD) and remain committed to the approved project design. No deviation is permitted during project implementation without the prior and explicit permission of the EPAs concerned.

2.2.2 Provincial Revenue and Other Departments

Since the issue of land acquisition and contacts with Agriculture, Horticulture and Forestry Department are not involved in this project, hence they are not elaborated.

2.2.3 Provincial Governments

The client must ensure that the project meets the criteria of the Punjab provincial government as related to the safe disposal of wastewater, solid waste, and toxic materials. The client will coordinate and monitor environment-related issues.

2.2.4 Local Government and Municipalities

The client will work with local government/administration and municipalities on the resettlement of squatters and removal of encroachments or sources of congestion if any. In such cases, the Client will frame an agreement with the municipality, local government, or other service provider concerned on the resettlement of displaced squatters.

2.3 OTHER ENVIRONMENT-RELATED STATUTES

This section outlines statutes apart from the Pakistan Environmental Protection Act, 1997, which are relevant to the project.

2.3.1 Antiquities Act, 1975

The Antiquities Act relates to the protection, preservation and conservation of archaeological/historical sites and monuments. It prohibits construction (or any other damaging) activity within 200 m of such sites unless prior permission is obtained from the Federal Department of Archaeology and Museums. The Antiquities Act also binds the project proponent to notify the department should anything of archaeological value be excavated during project construction.

2.3.2 Provincial Local Government Ordinances, 2001

These ordinances, issued following the devolution process, establish regulations for land use, the conservation of natural vegetation, air, water, and land pollution, the disposal of solid waste and wastewater effluents, as well as matters related to public health and safety.

2.3.3 Pakistan Penal Code, 1860

The Pakistan Penal Code deals with offences where public or private property and/or human lives are affected due to the intentional or accidental misconduct of an individual or body of people. In the context of environment, the Penal Code empowers the local authorities to control noise, noxious emissions and disposal of effluents. The PEQS enforced by the EPAs supersede the application of this legislation on industries and municipalities. The Penal Code, however, can provide a basis for the client to coordinate its activities with the local authorities to ensure that its construction activities do not become a cause of public nuisance or inconvenience.

CHAPTER – 3

DESCRIPTION OF THE PROJECT

3.1 GENERAL

This Chapter provides an overview of the project including main components, description and other related developmental activities to be carried out. It also provides project justification and its need, phasing and other relevant information etc.

3.2 TYPE AND CATEGORY OF THE PROJECT

According to PAKISTAN ENVIRONMENTAL PROTECTION AGENCY (REVIEW OF IEE AND EIA) REGULATIONS, 2022 "List of projects requiring an EIA" . the project which is under consideration falls under category of **Schedule II,** projects requiring an EIA Report for its environmental approval under section 12 of the Act.

3.3 OBJECTIVES OF THE PROJECT

1. To manufacture good quality of product to improve the input in national economy
2. To provide job opportunity to boost the personal income of the individual
3. To improve and upgrade the socio-Economic condition of the area
4. Environmental conservation through effective management and monitoring plans

3.4 ALTERNATIVES CONSIDERED REALISTICALLY AND REASONS FOR THEIR REJECTION

This Section describes alternatives to the location for the project. It includes a discussion on the site selection and technological criteria that were required to ensure that project design would meet the desired results, within defined economic,

environmental health and safety constraints. In particular it outlines the following project elements:

- The "No-Development Option"
- Alternative locations

3.4.1 Alternate Locations

The location of the project was decided after deliberations for the suitability of the site, considering the following factors:

- Legal status of the available land / ownership by the proponent
- Commercial importance of location
- Availability of utilities
- Easily approachable for prospective customers
- Availability of Sufficient space

So the site is best situated for this project.

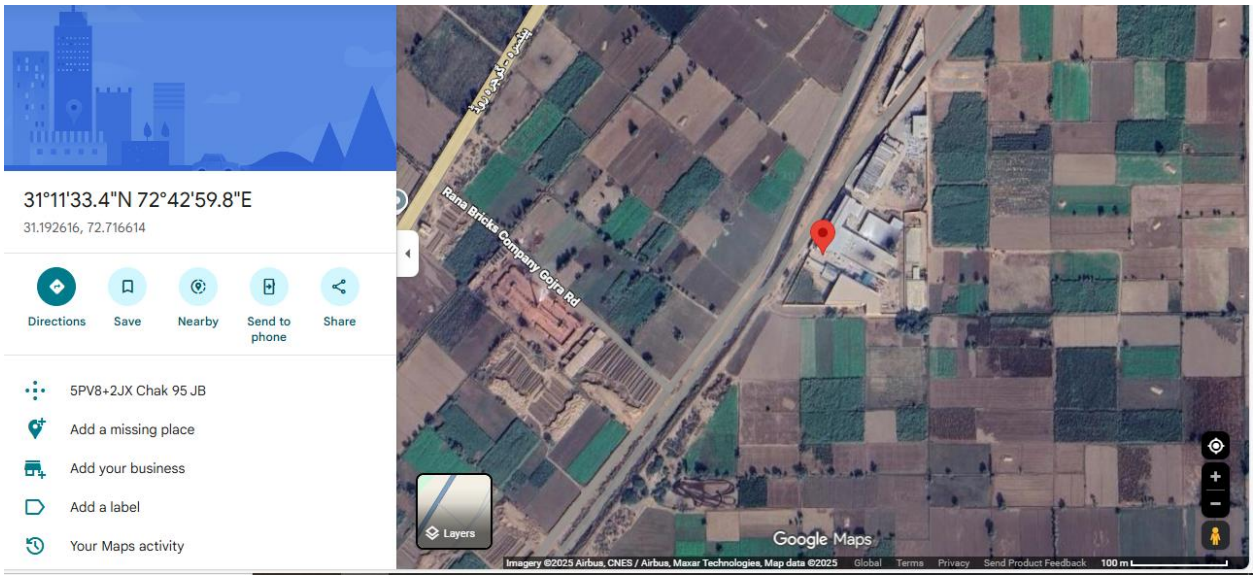
3.5 LOCATION & SITE LAYOUT OF THE PROJECT

Unit of Pak Alumex Industries (Aluminum Manufacturing Plant) is situated at Chak Number 95 / JB Near Korian Stop, Painsera Road, Tehsil Gojra, District Toba Tek Singh.

Plan Layout of the project is annexed at the end of the report.

3.6 ROAD ACCESS

Project is located along Painsera Road, Tehsil Gojra, District Toba Tek Singh connecting M-4 Motorway at a distance of about 20kms



3.7 VEGETATION FEATURES AT THE SITE

There are only a few bushes / small trees in and around project premises including Eucalyptus Camaldulensis, Beri (shrub) and Kikar.

3.8 SCHEDULE OF IMPLEMENTATION

3.8.1 Project Investment

The basic developmental activities and other project development will be carried out by Proponent.

3.8.2 Contractor's Arrangements

The proponent shall select contractors of such an ability and capacity to conform standards.

3.8.3 Work Force

The Project involves many construction activities like excavation, general amenities, drainage system, and other miscellaneous infrastructure. It is expected that project will involve a large number of professional, technical, skilled, semi-skilled and unskilled manpower directly and indirectly mainly coming from nearby villages.

The Contractor will be advised to hire the skilled and unskilled labour from the local communities.

3.8.4 Construction Material

Sufficient quantities of building materials will be required for the development. The materials required are enlisted below:

- Earth Material
- Cement
- Steel
- Water

Cement

Cement required for all building and structural works is available local Gojra market at a distance of about 5kms. However, cement can be available as per Project requirements.

Steel

Steel will be required for all structural works and it is easily available at local market.

Water Resources

Access to water for construction and campsite purposes will be not expected to be a problem. The chemical content of the available water, however, may limit the use of local surface water, particularly for mixing cement concrete. However, groundwater will be considered to be of acceptable quality for use in concrete works.

The project will be completed in one phase as under:

- Site preparation and construction works (Fixing of machinery and other construction will take 06 months);
- Commercial operation – 2 months.

3.9 INVOLVEMENT OF LABOR DURING CONSTRUCTION

During construction of sheds, fixing and installation of machinery, approximately 25 labors will be involved directly during day time only.

3.10 JOB OPPORTUNITIES

Unit will create employment opportunities for local poor community. Initially planned to hire 15 local persons and more people will find better and new sources of employment and income.

3.11 DESCRIPTION OF THE PROJECT

Pak Alumex Industries (Aluminum Manufacturing Plant) is situated at Chak Number 95 / JB Near Korian Stop, Painsera Road, Tehsil Gojra, District Toba Tek Singh.
The project is related to Aluminum Manufacturing Plant. The development activities will mainly involve civil, mechanical and electrical works associated with the installation of the unit and thereafter operations of the facilities. The main activities to be carried out in the development of the project include excavations or earth works, installation of the tank and pump and pipe works.

Description of process:

The manufacturing of aluminum involves heating aluminum metal (imported wires) to its melting point of approximately 660°C raised in a furnace for 4 to 5 hours, where it becomes a liquid. The process begins by placing aluminum (scrap or new) into furnace, then heating it until it melts and can be mixed and refined for desired properties, and finally, pouring the molten aluminum into molds to form it into new products.

Preparation

- Source materials: The process starts with either raw aluminum wires or, more commonly, recycled aluminum scrap which contains two alloy i.e. magnesium and silicon, which will then be converted into Grade – 6063 aluminum of 20 kgs billet.

- Cleaning: Scrap aluminum is often cleaned to remove contaminants, such as coatings, from its surface.

- Loading: The prepared aluminum is loaded into a melting furnace, which is lined with high-temperature resistant materials.

1. **Melting**

- Heating: The furnace is heated using electric or gas-fired systems to temperatures above the melting point of aluminum (660∘C)

- Melting: As the temperature rises, the aluminum pieces begin to melt, transforming into a liquid state.

- Stirring: The molten metal is stirred to ensure even heating and to help any remaining solid pieces melt faster.

- Refining: The liquid aluminum is checked for quality. Alloying elements may be added, and impurities can be separated using various techniques like filtering to achieve the desired composition and purity.

2. **Extrusion**

Aluminum extrusion is the process of forcing a heated aluminum billet through a die to create a long product with a specific cross-sectional shape. The process involves heating the aluminum, pushing it through a shaped die using a hydraulic press, cooling the resulting profile, and then cutting and age-hardening it to achieve the desired strength and temper.

Key steps in the aluminum extrusion process

- Loading: A lubricant is applied to the heated billet, which is then transferred to an extrusion press and placed inside a container.

- Extrusion: A hydraulic ram applies substantial pressure to the billet, forcing it through the die opening. The die's shape dictates the final profile of the aluminum, similar to squeezing toothpaste from a tube.

- Cooling: As the extrusion emerges from the die, it is moved onto a run-out table where it is cooled by fans or a water quench.

- Stretching: Once cooled, the long extrusion is moved to a stretcher to straighten it and work-harden the material.

- Cutting: The straightened extrusion is then cut to the required lengths.

3. Powder Coating

The powder coating of aluminum involves surface preparation and pre-treatment to clean and etch the surface, followed by an electrostatic application of dry powder, and finally curing the part in an oven to melt and fuse the powder into a durable, protective finish. This process creates a highly uniform and corrosion-resistant layer on the aluminum.

a. Surface preparation and pre-treatment

- Cleaning: The aluminum is thoroughly cleaned to remove any oils, grease, dirt, or other contaminants that could prevent proper adhesion.

- Degreasing: Solvents or alkaline solutions are used to remove grease.

- Conversion coating: A chemical pre-treatment creates a conversion layer to further enhance corrosion protection and improve the grip of the powder coating.

- Drying: The part must be completely dry after pre-treatment.

b. Powder application

- Electrostatic charging: The aluminum part is grounded. The dry powder is given a negative electrostatic charge by the spray gun.

- Spraying: The negatively charged powder is sprayed onto the positively charged aluminum part. This electrostatic attraction causes the powder to temporarily adhere to the surface.

- Coverage: The powder is applied evenly, even on complex shapes, and the electrostatic effect helps wrap the powder around to the back of the part

3.12 WATER/ WASTE WATER AND SOLID WASTE GENERATION

Less amount of waste water from washrooms or from kitchen will be primarily treated in septic tank. Waste water will not have any hazardous chemicals in it and it will not be injurious to health.

The solid waste is in nature of iron or aluminum pieces or packing materials for the products. The hard pieces will be used recycled for again production. However, solid waste generated due to human activities of 30-35 persons will be 4-5 kg/week which will be disposed of using the current solid waste management and disposal services. Proper waste bins or being used to recycle the solid waste.

As far as domestic solid waste generation is concerned, solid waste will be consisting of kitchen waste or packing material, it will be sold to local market on competitive rates.

3.13 GOVERNMENT APPROVALS

Government Approvals are obtained and annexed at the end of the report.

CHAPTER – 4

ENVIRONMENTAL BASELINE

4.1 INTRODUCTION

Toba Tek Singh emerged as separate district on the map of Punjab with effect from July 1982 after detaching it from Faisalabad district. This town Toba Tek Singh was founded some times in the beginning of the colonization era. It was named after a Sikh saint.

Gojra is 168 m above sea level and located at 31.15° N 72.68° E. Gojra has a population of 139726.

Background

The total population of Toba Tek Singh district 1,621,593 as per census in March 1998 with an interregnal percentage increase of 42,9 since March 1981 when it was 1,134,572 souls. The average annual growth rate was 2.1 per cent during this period. Population composition was 105 females compared to 100 males. 24% population resided in urban areas and 76% lived in rural areas. Average household size was 7.2. The total area of district is 3,252 square kilometer as against 349 persons observed in 1981 indicating a fast growth rate of the district

Gojra town was established in 1896 when colonization of Lyallpur (Faisalabad) began. The railway line between Lyallpur and Gojra was laid in 1899. The town was given the status of notified area committee in 1904 and upgraded as B-Class Municipality in 1925.

4.2 PHYSICAL ENVIRONMENT

In Gojra, the summers are sweltering, humid, and clear and the winters are short, cool, dry, and mostly clear. Over the course of the year, the temperature typically varies from 43°F to 105°F and is rarely below 38°F or above 112°F.

Climatic Conditions	
Humidity	12%
Wind	6km/h
Rain	0%
Cloud	0%
Visibility	10km
Pressure	1005mb

4.2.1 Meteorology

The climate touches two extremes, characterized by hot summers and mild winters. From April onwards, the summer season continues usually up to the middle of October after which it becomes cool and the day temperature also begins to recede. May, June and July are the hottest months. The winter season on the other hand starts from November and continues till March. December, January and February are coldest months. The mean maximum and minimum temperature in summer are 41^{o}C and 27^{o}C respectively and in winter 19^{o}C and 4^{o}C respectively.

Place Name	1–3 Day Summary	4–6 Day Summary	7–9 Day Summary	10–12 Day Summary
Toba Tek Singh 27 km	Mostly dry.	Moderate rain (total 13mm), heaviest on Sun afternoon.	Mostly dry.	Mostly dry.

The hot season lasts for 3.6 months, from April 25 to August 12, with an average daily high temperature above 98°F. The hottest day of the year is June 7, with an average high of 105°F and low of 82°F. The cool season lasts for 2.7 months, from December 2 to February 22, with an average daily high temperature below 74°F. The coldest day of the year is January 9, with an average low of 43°F and high of 66°F.

4.2.2 Rainfall

Gojra has very few rainfalls. The summer season continues for 6 to 7 months upto September and the winter season upto March. The bulk of monsoon precipitation occurs in July and August, with monthly averages of 115.0 and 89.8 mm respectively. Minimum rainfall occurs in the month of November, which is 3.0 mm.

Gojra experiences significant seasonal variation in monthly rainfall. The most rain falls during the 31 days centered on July 24, with an average total accumulation of 2.7 inches.

The rainless period of the year lasts for 4.0 months, from October 2 to February 1. The least rain falls around November 3, with an average total accumulation of 0.1 inches

4.2.3 Precipitation:

A wet day is one with at least 0.04 inches of liquid or liquid-equivalent precipitation. The chance of wet days in Gojra varies throughout the year.

The wetter season lasts 2.7 months, from June 20 to September 10, with a greater than 16% chance of a given day being a wet day. The chance of a wet day peaks at 31% on July 22.

The drier season lasts 9.3 months, from September 10 to June 20. The smallest chance of a wet day is 1% on November 6.

Among wet days, distinguishing between those that experience rain alone, snow alone, or a mixture of the two. Based on this categorization, the most common form of precipitation throughout the year is rain alone, with a peak probability of 31% on July 22.

The average monthly amount of precipitation has been recorded at around 9 mm, that's 0 inches. Throughout the month one can expect to see rain or drizzle falling on 1 days of the month.

4.2.4 Clouds

The average percentage of the sky covered by clouds experiences significant seasonal variation over the course of the year.

The clearer part of the year in Gojra begins around August 9 and lasts for 3.4 months, ending around November 22. On September 25, the clearest day of the year, the sky is clear, mostly clear, or partly cloudy 98% of the time, and overcast or mostly cloudy 2% of the time.

The cloudier part of the year begins around November 22 and lasts for 8.6 months, ending around August 9. On March 17, the cloudiest day of the year, the sky is overcast or mostly cloudy 31% of the time, and clear, mostly clear, or partly cloudy 69% of the time.

4.2.5 Wind Characteristics

Hourly average wind vector frequently varies (speed and direction) at 10 meters above the ground. The wind experienced at any given location is highly dependent on local topography and other factors, and instantaneous wind speed and direction vary more widely than hourly averages.

The average hourly wind speed in Gojra experiences *mild* seasonal variation over the course of the year.

The windier part of the year lasts for 5.0 months, from March 29 to August 30, with average wind speeds of more than 5.7 miles per hour. The windiest day of the year is June 23, with an average hourly wind speed of 7.0 miles per hour.

The calmer time of year lasts for 7.0 months, from August 30 to March 29. The calmest day of the year is November 6, with an average hourly wind speed of 4.5 miles per hour.

4.3 WATER SOURCE

The water supply schemes in the district are broadly using water from two sources; surface sources and groundwater sources comprising tube wells and dug wells. 70 of the water supply schemes, which figures out to 56 percent of the functional schemes, have the groundwater (wells) sources. The wells as source of water appear to be more prominent in Gojra tehsil (33 schemes) and Toba Tek Singh tehsil (32 schemes). The remaining 54 water supply schemes (44%) have the surface water source, which appears to be dominant in Toba Tek Singh tehsil with 50 schemes.

4.3.1 Surface Water

Surface water, on the overall, 35 percent of the population uses this water source. By tehsils, surface sources of water are used by more prominent population proportion in Toba Tek Singh (41%). Probably, it means that the served population tends to be directly related to the dominant sources of water supply.

4.3.2 Ground Water

In relation to population and source of water, it is evident that 65 percent of the population use groundwater (wells). In conformity with the domination of wells, 98 percent of population in Gojra uses this ground water for all purposes.

4.4 PHYSICAL FEATURES AND TOPOGRAPHY

4.4.1 Topography

Topography of the Project district is totally flat with mild slope from North to South. Project Area is 500metre above the mean sea level. The soil is fertile. The soil in the Project Area is rich alluvial loam.

The geographical coordinates of Gojra are 31.149 deg latitude, 72.683deg longitude, and 554ft elevation.

The topography within 2 miles of Gojra is essentially flat, with a maximum elevation change of 59 feet and an average elevation above sea level of 552 feet. Within 10

miles *is* essentially flat *(*98 feet*).* Within 50 miles also contains only modest variations in elevation (413 feet).

The area within 2 miles of Gojra is covered by cropland (72%) and artificial surfaces (28%) , within 10 miles by cropland (96%), and within 50 miles by cropland (84%) and bare soil (13%).

4.4.2 Air Quality

The air quality in Gojra is mostly free from pollutants except dust on the roads where interchanges and flyovers are proposed. A lot of dust occurs due to dry atmosphere and the situation gets aggravated by the human activity. Large amount of suspended particulate matter (SPM) is generated when the vehicles move (to overtake other vehicles) on unpaved shoulders of these roads

4.4.3 Noise

As the existing status of the Project area is mostly agricultural fields and some road crossings therefore noise is serious issue only at road crossings. Roadside noise levels were measured from the edge of the road (about 7.5 m from the source). Average noise level along the road is between 30 – 48 dB (A). Noise along the site of Gojra is not a serious issue.

4.5 BIOLOGICAL ENVIRONMENT

4.5.1 Flora

After clearing the Tropical Thorn Forests, using canal water irrigation, better areas were cultivated.

Main tree species grown are: Dalbergia sissoo (shisham), Morus Alba (Mulberry), Acacia nilotica (kikar), Populus Spp. (Poplar), and Eucalyptus camaldulensis (sufaida).

Indigenous flora includes Prosopis cineraria, Tamarix aphylla, Capparis aphylla and Salvadora oleoides with undergrowth of Chenopodium album, and Cannabis sativum.

4.5.2 Fauna

Due to thickly populated project area, wildlife except jackal, porcupine, wild cat and hare have vanished. Mammals and reptiles are seen at very rare places. With the development of site, these will no significant effect on them.

4.6 NATIONAL PARKS, RESERVED FOREST WILD LIFE SANCTUARIES

In the Project Area or in its close vicinity or even up to 1 km from Project site, no national park, reserved forest and wild sanctuaries were observed.

4.6.1 Migratory Birds

As no major water body exist in close vicinity of the Project Area, so no migratory birds were observed in the area.

4.6.2 Endangered Species

No floral and faunal endangered species were observed in the Project as well as study area.

CHAPTER – 5

SOCIAL BASELINE

5.1 History

The area now comprising the new district of Toba Tek Singh was originally a part of Jhang District and Lyallpur District. As a result of reclamation proceeds fresh administrative problems naturally presented themselves and the boundaries of the old district had to undergo extensive modifications and new administrative units were set-up.

General

Gojra the administrative capital of Gojra Tehsil, is part of Toba Tek Singh District in the Punjab province. Gojra is about 50 kilometres (31 mi) from Faisalabad, 170 kilometres (110 mi) from Lahore and 20 miles (32 km) north of Toba Tek Singh. Founded in 1896 during the British colonial period, Gojra was the commercial centre of lands which had recently come under cultivation, and was known for its "mandi" (market) for cash crops. It is the 51st largest city of Pakistan by population according to the 2017 census

DISTRICT / TEHSIL	REGION	POPULATION
TOBA TEK SINGH DISTRICT		2,190,015
	Rural	1,748,085
	Urban	4441,930
GOJRA TEHSIL		656,007
	Rural	481,147
	Urban	174,860

5.2 SOCIO-ECONOMIC ENVIRONMENT

Traditional attire in Gojra is Punjabi clothing such as the dhoti, kurta and pagri. Gojra men wear white shalwar kameez as do women but with a dupatta (scarf). Mostly women wear burqas that may or may not cover the face. Combinations of Pakistani and Western attire are worn by women, such as an embroidered kurta worn with jeans or trousers, and half sleeve or sleeveless shirts with Capri pants. Men have adopted some of the modern Western styles for both casual and formal business dress such as dress pants, trousers, T-shirts and jeans.

Gojra contributed a number of players to the Pakistan Hockey team. In 2015, Gojra Hockey Club, a local club, won the Jat Tar Singh memorial hockey tournament. This high-profile tournament was held in India,

In cricket, Gojra's Ehsan Adil has represented the Faisalabad Wolves, Habib Bank Limited cricket team and Pakistan Under-19 cricket team. He has been selected in Pakistan's Test Squad for tour to South Africa in February 2013.

5.2.1 Geology

The district of Toba Tek Singh is part of the alluvial plains between the Himalayan foothills and the central core of the Indian subcontinent. The alluvial deposits are typically over 1,000 feet thick. The interfluves are believed to have been formed during the Late Pleistocene and feature river terraces. These were later identified as old and young floodplains of the Ravi River on the Kamalia and Chenab Plains. The old floodplains consist of Holocene deposits from the Ravi and Chenab rivers.

The soil consists of young stratified silt loam or very fine sandy loam that makes the subsoil weak in structure with common kankers at only five feet. The course of the rivers in Faisalabad is winding and often subject to frequent alternations. In the rainy

season, the currents are very strong. This leads to high floods in certain areas which last for days.

The Rakh and Gogera canals have encouraged the water levels in the district; however, the belt on the Ravi River has remained narrow. The river bed includes the river channels which have shifted the sandbars and low sandy levees leading to river erosion.

5.3 HEALTH FACILITIES

Publicly funded and Government hospitals are located in Gojra. A famous Eye and General Hospital is running in this area. This hospital was built before Independence, has 150 bed facilities. This hospital is very famous in area because of its special eye related services to its patients.

There are various private hospitals in Gojra. They provide quality health treatment to patients. These are specialized in providing primary to specialized health care facilities to its citizens. In addition, there are also running private welfare institutions with specialized health care

5.4 EDUCATION FACILITIES

Educational facilities in the Project Area are not inadequate, but quality of education is not up to the merit. Respondents showed their apprehensions about the quality of education.

The educational facilities available are less than the requirements. The break-up is given below:

Gojra Education Facility		
Institution	**Male**	**Female**

College	1	1
Commercial College	1	-
High School	26	17
Middle School	7	30
Primary School	18	139
Total	**218**	**187**

5.5 INDUSTRIAL ACTIVITIES

District Toba Tek Singh is lagging behind in industrial growth. The break-up of industrial units is as under:

Industries	No
Sugar Mills	2
Ice Factory	36
Ginning Factory	45
Cold Storage	12
Oil Expeller	13
Flour Mill	19
Poultry Feed	6

Gojra is famous all over the world for its textile industries but no textile unit is presently situated along the route. In districts of Toba Tek Singh, very little commercial units i.e. only a few sugar mills and spinning units but none of them are along the route.

5.6 SOLID WASTE MANAGEMENT

Gojra currently generates about 77 tons of municipal solid waste daily, and is estimated to have a yearly volume of 27720 tons. In absence of a proper solid waste

management system and data non availability, such estimates and calculations are based upon current population X 0.4 kg/capita/day solid waste produced.

Due to its population growth and increase in its economic activity, Gojra's daily generation is destined to accelerate to about 121 tons per day (43560 tons per year) by 2023 using 0.457 kg/capita/day, and then to about 194 tons daily (69840 tons per year) by 2033 using 0.531 kg/capita/day as shown in graph. This is a massive amount of municipal waste for Gojra.

5.7 RELIGION

Islam is the common heritage in the region with a 97.22% Muslim majority according to the 1998 Pakistan census report. Islamic influences are evident in the fundamental values of inhabitants including cultural traditions, marriage, education, diet, ceremonies and policies that may reflect stark differences in rural villages as compared to urban areas. People live in tight-knit joint families, although a nuclear family system is emerging due to changing socio-economic conditions

Religion plays a vital role in people's life. Majority of the Project Area population is Muslim. Cultural festivals are mostly related with religious traditional events. The visit to shrines (termed as Ziarat) is a very common among people. Only minority identified are Christian in the areas which are less than 1 percent

5.8 COMMON DISEASES

Large amount of suspended particulate matter (SPM) is generated. Therefore health effects can be immediately felt by sensitive groups. Healthy individuals may experience difficulty breathing and throat irritation with prolonged exposure. Limit outdoor activity. Moreover Diarrhea and Pneumonia are also common diseases in Gojra

5.9 QUALITY OF LIFE

5.9.1 Education Status

The literacy ratio in the district has increased from 30.3 per cent in 1981, to 50.5 per cent in 1998. The literacy ratio for males is 61.3 per cent as against 39.1 per cent for females. The ratio is much higher in urban when compared with rural areas both for male and female.

5.9.2 Nature of Occupation (Employed & Unemployed)

The unemployment rate in the district was 17.3 per cent, which was mainly due to unemployment amongst male representing 17.6 small proportions in their total economically active population. The unemployment rate higher in urban as compared to rural areas representing 18.6 and 17.0 per cent respectively.

In 1998 of the total employed persons, 36.5 per cent had skilled agricultural and fishery works. Same percent had elementary occupations, followed by service workers; shop and market sales workers represented 9.1 per cent, craft and related trade workers, 6.3 per cent. In rural areas people having skilled agricultural and fishery works were again in majority, followed by elementary occupations and service workers, shop and market sales workers, represented 43.0,1 35.3 and 6.7 per cent respectively. The highest percentage in urban area is of elementary occupations, followed by service workers, shop and market sales workers having 42.0 and 19.8 per cent respectively.

5.10 AGRICULTURE

5.10.1 Production

Toba Tek Singh is one of the best producers of oranges, locally known as kinnos. It contributes towards export standard quality of oranges produced all over Pakistan. The

majority of people living in this district work in agriculture and the region produce several kinds of agricultural and dairy products, including meat, eggs, cotton, maize, pulses, peaches, guava, tomato, melon, water melon, mangoes, tobacco, and

Tropical Thorn Forest

Most of this region has been cleared for cultivation. Remnants of the original flora are almost vanished for need of fuel wood, grazing, timber, and felling by charcoal burners. The Project area falls in this vegetation zone. About 20% of the project district has still original flora existing over it.

5.11 HOUSEHOLD EXPENDITURE

5.11.1 Housing Condition

	NO OF HOUSEHOLDS		
District	**Weighted %**	**Weighted**	**Unweighted**
Toba Tek Singh	100	91,075	91,075
Tehsil			
Gojra	31.4	628	671

No of Household Members	**Weighted %**	**Weighted**	**Unweighted**
1	0.8	16	18
2-3	12.1	241	268
4-5	25.4	507	576

6-7	30.1	602	673
8-9	18.2	364	407
10+	13.4	268	288

5.11.2 Access to Social Amenities

During socio-economic survey to develop the social baseline of the Project Area, the respondents were inquired about the utilities in their homes. Almost all the respondents had electricity in their homes whereas 95% had the facility of water supply in their homes. On the other hand 54%, 23% and 15% of the respondents respectively had the facility of sewerage system, landline phone and Sui gas at their homes.

5.11.3 Access to Road

Communication network is a fundamental prerequisite for economic activity to take place. The surrounding villages of the project area are well connected with main road and district headquarters through metalled village roads and sugar can cess roads.

CHAPTER - 6

SCREENING OF POTENTIAL ENVIRONMENTAL IMPACTS AND MITIGATION MEASURES

6.0 ENVIRONMENTAL PARAMETERS

This section identifies the potential impacts related with operation of the project on the physical, ecological and socioeconomic domains of the environment. Accordingly mitigation measures have also been reported to manage the environment and for sustainable development. The project activities will neither adversely affect the population nor the environment around the project site.

6.1 ENVIRONMENTAL PARAMETERS ASSOCIATED WITH LOCATION OF PROJECT

Environmental problems related to the location of the project are mostly in the areas of physical setting, socioeconomic setting, ecological and special areas the unit is located in District Toba Tek Singh. Field survey revealed that impacts of the current project due to its location are insignificant in nature. As discussed earlier that there is no physical setting, socioeconomic, ecological and special areas around the project area. Transportation of the machinery and equipment as well as raw materials will be responsible for the backend impacts. Because of their very nature, the majority of the frontend are likely to abate with the completion of the project's operation e.g., generation of undue noise, exhaust emissions from consumption of fossil fuel in the machinery and generation of drag dust from enhanced movement of vehicles in connection with various project activities.

6.1.1 Impact Assessment Methodology

A comparative analysis of both the negative and the positive impacts has been carried out with respect to the existing baseline conditions. The said comparison followed a

parametric and a non-parametric scheme i.e., how and to what extent various environmental quality parameters (e.g., relating to soil, air, water, and aesthetics) and non-parametric aspects (economy, social value system, employment, lifestyles, and behavioural patterns) will be influenced by the various project activities within the project's radius of influence.

6.2 PROJECT DESIGN

The design of project has sought to minimize any environmental potential impacts by ensuring that the project should be in accordance to the environmental standards. Local aesthetic value, wind direction, human settlement was also considered during project design.

6.2.1 IMPACTS AND MITIGATION MEASURES DURING CONSTRUCTION PHASE

The discussion following hereinafter relates to the construction phase impacts of the project onto various important environmental parameters.

6.3 LAND RESOURCES

This section explains how the project will affect the land use, soil erosion and contamination, and describes mitigation measures to manage these impacts.

6.3.1 Impact on Land Use and Resources

A. Land Productivity and Use

Open pits containing water will be potential sources of mosquito breeding if left stagnant, and can create health problems.

6.3.2 Mitigation Measures

The mitigation measures, which will be carried out in design stage, construction as well as operation stages for land resources are as under:

A. Land Productivity and Use

a) As far as possible, waste/barren land i.e. areas not under agricultural, residential or forestation use, and natural areas with a high elevation will be used for borrow material.

b) The excavation of earth fill will be limited to an approximate depth of 50 cm. This practice will be applied uniformly across the entire extent of the land unit acquired for borrowing earth material.

B. Soil Contamination

The following practices will be adopted to minimize the risk of soil contamination:

a) The proponent will be required to instruct and train their workforce in the storage and handling of materials potentially causes soil contamination.

b) Solid waste generated during construction and at campsites will be properly treated and safely disposed off only in demarcated waste disposal sites.

Proper solid waste storage will be adopted for the project such as:

a) All garbage or other waste should be securely wrapped in similar material bags.

b) All cans, bottles, or other food containers would be rinsed free of food particles and drained before being placed in collection containers.

c) Collection containers should be kept tightly sealed or covered at all times. Solid waste must not protrude or extend above the top of the container.

C. Primary Collection

The solid waste from the area would be collected by the staff which will be arranged by Proponent. The staff would be made readily available on call.

D. Public Awareness

For a safe and systematic disposal of Solid Waste, the public awareness can play a vital role. Press releases, seminars, social organizations and ground breaking

ceremony can be the major sources of public awareness. All such type of public awareness sources for safe and systematic disposal of solid waste should be used.

6.4 WATER RESOURCES

This section explains how the project will affect the water resources use, contamination of water bodies and groundwater, siltation of surface water resources and alterations in drainage pattern; the section also describes mitigation measures to manage these impacts.

6.4.1 Impact on Water Resources

The surrounding land's drainage system and water resources will be affected by construction and operational activities as follows:

Contamination of Surface and Ground Water Resources

a) During operation stage, disposal of wastewater into natural streams/canal will deteriorate the surface water quality.

b) Seepage of polluted water during monsoon season through garbage areas will deteriorate the groundwater quality during operation stage of the project.

6.4.2 Mitigation Measures

Measures to mitigate the adverse impact on water resources and surface drainage patterns will be incorporated into the project design and are discussed below:

A. Use of Local Water Supplies

a) In the project area, prior to start of construction activities, the availability of water will be assessed to evaluate the impacts on the community resources. A tube well will be installed for the purpose.

b) No existing water resources under the use of community will be exploited by the Contractor for construction purposes without consultation with concerned community.

6.5 AMBIENT AIR QUALITY AND NOISE LEVEL

This section discusses the impact of the construction and operation on the ambient air quality and noise levels in the Project Area. It also describes the mitigation measures to manage these impacts.

6.5.1 Impacts

Ambient Air Quality

Air quality will be affected by the fugitive dust and emissions from the construction machinery during the construction phase. Emissions may be carried over long distances, depending on wind speed and direction, the temperature of the surrounding air, and atmospheric stability.

Noise Level

Noise generated by the construction machinery during the project construction and subsequently by vehicular traffic will be likely to affect the project area particularly the sensitive receptors like schools, hospitals etc. However, no sensitive receptor has been observed within the project area.

6.5.2 Mitigation Measures

The following measures will be implemented to mitigate the impacts on the ambient air quality and noise level:

Ambient Air Quality

a) Vehicles and other construction machinery should be properly tuned and maintained, so as not to emit any smoke.

b) The PEQs applicable to gaseous emissions generated by the construction vehicles, equipment and machinery will be enforced during the construction works.

6.6 BIOLOGICAL ENVIRONMENT

The impact on flora and fauna and corresponding mitigation measures are described in the following paragraphs:

6.6.1 Impacts on Flora and Fauna

(a) Flora

Trees & Shrubs

The only trees which grow near project site include: Kekar (Acacia nilotica (L.) Delile, Neem (Azadirachta indica), Mulberry (Morus alba), Willow (Salix spp), Shishan (Dalbergia sissoo), Siris (Albizzia procera), Mango (Mangifera indica), Bakain (Melia azadarich)

(b) Fauna

The project is walled and surrounded by open land. Therefore, there will be no adverse effect on their existence as they have already vanished.

6.6.2 Mitigation Measures

(a) Flora

Trees and Shrubs

The plantation program for the vacant sites which are mentioned on the design has been prepared and which will be implemented.

(b) Fauna

As already mentioned, there will be no effect on fauna of the area.

6.7 IMPACT AND THEIR MITIGATION MEASURES DURING OPERATIONAL PHASE

POTENTIAL IMPACTS	MITIGATION MEASURES
Solid Waste Management Improper and unplanned solid waste dumping can cause environment, health and safety issues. It also can potentially deteriorate the living quality of the residents besides reducing the aesthetic quality of the entire project.	Solid waste generation from the operational phase will be of domestic and industrial waste. The domestic waste will be collected and separated by the separate bins. And collected by the sanitary workers. The other is industrial waste that include empty bins, scrap

Metal scraps impurities collected at the top of the molten metal, make up the largest portion of aluminum-making by-products.	and other material that will be collected in marked waste bins according to category and type of the waste. Some of them will be reused and other sent to scrapyard for sale. Communal bins will be provided at the each specified place to resolve the problem of collection. On site collection of material & waste will be done to minimize the time and efforts for the separation and collection. A method of integrated solid waste management system will be followed and adopted to avoid resource exploitation and Increase resource efficiency. Solid waste segregation into the organic and Inorganic and hard material, metal, scrape will be collected in separate bins to make it ease on site segregation.

Wastewater Disposal Wastewater generated due to domestic/process activities result in the spread of vector borne diseases like dengue, malaria, as well as spread the nuisance of foul smell.	Waste water will be handled with the settling tank to treat the fluid water. The objective of this is to treat the waste water and recover the material for the further use as in put as raw material. The waste water will be drain in the main drain and its copy of challan is attached. The domestic waste water will be treated by the septic tank and then it will be disposed off scientifically.
Energy Conservation Excessive use of energy exerts more pressure on the already dwindling energy resources of the city/country.	The proper training is being given to workers to follow the rules of energy conservation. The workers and admin are working to reduce the energy consumption by using strategic approach. Maximum day light is being used as the hall are well ventilated and well design by maximum day light design of the workshop and working place. Besides, the environmental cell and HSE supervisor (chemical engineer) or working to ensure the safety and security, and consumption of energy in right place atright time. the machinery and equipments are being used or in good working

	conditions. They are being operated with less consumption energy.
Noise Generation Noise emissions due to traffic and any activities create issues to the residents.	All the machineries and equipments & instruments are working in the unit will be of good quality. They are sound less or if they are, within the limits prescribed by the PEQS 2016. The results of the noise level measures during the working hours is monitored and they are in range. The machinery and equipments are well checked and daily monitored to control the noise level. Any activity that will lead to noise emission is restricted to day time only. Traffic load management is being done to avoid the issue of traffic noise. Installation of generators with exceeding PEQS decibels is discouraged through providing adequate sound proofing. The whole system will be well mechanized and in the closed hall. Thus issue of noise pollution is negligible. Ear muffs, ear plugs, ear canals have been provided to workers to ensure their occupational health and safety.

Emergency/Fire Hazards Emergencies e.g. fire incidents may lead to environmental, health and safety issues to the workers/staff.	Emergency preparedness plans is being done on monthly basis. Different training and is being provided to the worker to fight back with any emergency situation. Call points, suitable locations are also mentioned. Carbon fire extinguishers along with other safety have been installed vertically at the height of 4 ft from the ground level. Emergency exit and assembly points are also designated to combat any emergency situation.
Training of Staff Unskilled persons are not able to tackle environmental, health and safety related situations which may further aggravate any such issues and cause loss of human life and property.	Regular training of the staff is being conducted. Proper monitoring and reporting mechanism is developed where the team is responsible to communicate/report any illegal or hazardous situation to the team leader.
Social Impacts Problems regarding privacy of local community may arise due to invasion of outside population.	The local and the project workers will be advised to work in harmony and work with peace and brotherhood. However, having a proactive approach, improper social behaviors e.g. staring and teasing is discouraged and any such incident report directly to the site in-charge. Any misconduct and improper or miss behaviour is dealt with strict

	action leading to job loss without prior notice
Transportation Transportation for storage stuff is compulsory to make the project site suitable and environment friendly.	Transportation vehicles is being maintained in good conditions to avoid the chances of accidents. The transportation vehicles are properly field and checked on regularly basis. Demarcation of proper area onsite for parking of the vehicles is designated. Transport for the workers is being provided free from the company. Pick and drop for the staff and company workers are free. Now in operational phase, vehicles are entered into the project site according to schedule and need. Being in the proper maintenance and industrial area there is a demarcation and proper plan of incoming and outgoing of the vehicles.
Terrestrial biodiversity Development should not disturb the biodiversity because biodiversity are the precious elements of the area	Different species of indigenous flora is being planted at the site. The tree of different species is well maintained. Adopting a vegetation program that uses indigenous stocks of local flora is being followed. The lawns and green belts are being well maintained to

	increase the aesthetic beauty of the nature and subject place.
Health and safety Health and safety parameters are the key necessities of the any project in which minor negligence can have damage.	Following mitigation measures have been followed and adopted on priority basis; ➢ Enforcing site security ➢ Ensuring site safety ➢ Enhancing safety at site facilities ➢ Establishing environmental controls ➢ Regulating transportation on-site ➢ On site information ➢ Exit plans ➢ Safety equipments ➢ Safety instruments ➢ Safety gadgets ➢ Information and guidance with proper working safety signs
Emergency preparedness plan Emergency preparedness plan is fundamental factor of any project site so that in case of any emergency conditions can be tackled.	For emergency preparedness plan there is fire hydrants and fire extinguishers at certain points. They are well managed and checked on regularly basis. Each facility is well equipped with safety. The worker drilling to combat with emergency situation is being followed and training done by

	different departments. The emergency preparedness training is given to each facility worker to deal with emergency situation.
Socioeconomic Socioeconomic factor comes in priority parameters because it's about surrounding people income.	By reducing socioeconomic problem following measures is being adopted; The proponent is committed to give job opportunity to the locals of the area. The proponent is providing job opportunity to the native or local residence of the area.
Storage of raw material and final products	Raw material will be stored at designated ware house / yard to keep in care full place and separate place to avoid from any incident or accidents. The final products will be transferred to the client after packing. The demand and supply is depond on the market demand. The working is subject to the demand of the market.
Environmental Monitoring	The proponent is enduring compliance to make its working legal in eyes of the law to avoid any inconvenience. That's why he is applying for the NOC to ensure the compliance under PEQS 2006. The proponent will follow the guidelines and conditions provided by the EPA, Punjab. Owner will fulfill all the demands to ensure the safety of

	environment.
Worker's safety plan	SOPs are established for all activities on the site in working, operational phase, workers are being trained first and then induct to the work. They are guided to follow SOPs and provided with necessary PPEs wherever required. Careful monitoring is also be carried out to ensure the safety of the workers.
Housekeeping	Observed tasks, daily each site inspection, each facility observation, cleanliness proper house keeping is being done to make units germ free.
Product outbound , raw material inbound, services inbound and outbound.	Co-ordinate ingoing and outgoing trips to reduce congestion at peak times. Supply materials in appropriately designed bulk containers. All vehicles to be appropriately licensed.

6.8 SOCIOECONOMIC AND CULTURAL ENVIRONMENT

This section describes the impact of the Project on local communities, construction workers, indigenous and vulnerable people as well as on structures or sites of cultural and religious significance.

6.8.1 Social Impacts

(a) Impacts on Local Communities/Workforce

a) Community will have to face the noise and dust problems during the construction phase and air and noise emissions during operation stage.

b) Pollution of the community resources during construction and operation stages.

(b) Gender Issues

As the project area lies close to the rural areas and rural community, women activities in the field may become affected due to the construction activities.

(c) Indigenous, Vulnerable and Women Headed Households

During field visit of the project, no indigenous group of people was identified. So, no impact on the indigenous people will be envisaged due to the implementation of the project.

(d) Safety Hazards

Occurrence of accidents/incidents during the construction and operation stages may occur to the workers.

(e) Religious, Cultural and Historical Sites

No such site will be adversely affected.

(f) Sensitive Areas, Game Forest Reserves

No such area exists in the vicinity.

6.8.2 Mitigation Measures

(a) Local Communities/Workforce

The presence of migrant workers inevitably causes some degree of social unease and even active disputes with the local community as a result of cultural differences. Potential social conflict will be contained by implementing the measures listed below:

The Proponent will be required to maintain close liaison with the local communities to ensure that any potential conflicts related to common resource utilization for the project purposes are resolved quickly.

Proponent will take care of the local community and sensitivity towards the local customs and traditions will be encouraged.

Effective construction controls by the Proponent to avoid inconvenience to the locals due to noise, smoke and fugitive dust.

(b) Loss of Income

No such problem will be foreseen. Rather income sources will increase.

(c) Gender Issues

The Proponent will have to select the specific timings for the construction activities so as to cause least disturbance to the local population particularly women considering their peak movement hours.

(d) Indigenous, Vulnerable and Women Headed Households

As referred earlier, no indigenous people have been identified in or along the Project corridor, so no mitigation is required.

(e) Safety Hazards

Training of workers in construction safety procedures, environmental awareness, equipping all construction workers with safety boots, helmets, gloves, and protective masks, and monitoring provided with their proper and sustained usage.

Contractor will ensure the provision of medicines, first aid kits, vehicle, etc. at the site.

A contingency plan will be prepared by the Contractor to handle any abnormal situation like fire, storm, etc.

(f) Relocation of Private/Public Infrastructure

No such issue will arise.

(g) Religious, Cultural and Historical Sites

No such site is located in near vicinity of site.

6.9 ENVIRONMENTAL AND SOCIAL EMERGENCY CONTINGENCY PLAN

To cater for the environmental and social issues during construction stage, special emergency contingency plan will be prepared by the Contractor at construction and operation stages respectively. The plan will be prepared for the following main items:

a) Availability of ambulance, first aid box, etc. at project site for carriage of workers to the hospital in case of any accident/incident.

b) For firefighting arrangements during construction and operation stages in case of any emergency.

c) Arrangements for leakage of any hazardous emissions/gasses from unit during operation stage.

d) Arrangements to cater for any storm or natural disaster like earthquake, etc.

e) Arrangements for any safety and security risks, etc.

CHAPTER – 7

ENVIRONMENTAL MANAGEMENT & MONITORING PROGRAM

7 GENERAL

This chapter deals with the policy framework for environmental management and monitoring. This also discusses that Client will be responsible for implementing and/ or monitoring the environmental mitigation actions.

7.0 OBJECTIVE OF ENVIRONMENTAL MANAGEMENT PLAN

The Environmental Management Plan (EMP) is the integral part of environmental assessment report. The primary objectives of the EMP are to:

- Define the responsibilities of project proponent, contractors and other role players, and effectively communicate environmental issues among them;
- Facilitate the implementation of the mitigation measures identified in the EIA by providing the technical details of each project impact, and providing an implementation schedule;
- Define a monitoring mechanism and identify monitoring parameters to ensure that all mitigation measures are completely and effectively implemented;
- All environmental safeguards are carried out correctly.
- Adverse impacts on environment are minimized.
- All relevant legislation is complied with
- The project is monitored for environmental impacts.

7.1 STRUCTURE OF EMP

The structure of EMP should:

- Propose environmental control methods to be used to prevent or minimize environmental impacts.
- Assign responsibility for each control measures to a specific staff member.
- Identify key monitoring parameters and schedule of monitoring of these parameters identify training requirements at various stages of the development of the project.
- Identify the resources required to implement the EMP and outline relevant expenses arrangements.

7.2 INSTITUTIONAL CAPACITY

The following organizations would be involved in the implementation of the proposed EMP;

- Proponent of the project
- Project Contractor, as the Executor of the EMP during construction stage of the project Environmental Manger / Supervisor to monitor and execute the EMP during construction and operation stage.
- Environmental Protection Agency (EPA) Punjab, as Government Department to review and monitor the implementation of remedial and mitigation measures as given in EIA Report.

7.2.1 Specific Implementation Responsibilities

The implementation of the EMP will be the prime responsibility of the project proponent. He will designate responsibilities and obligations to its selected contractors

and Environmental Manager / Supervisor. Specific responsibilities of key role players are illustrated hereunder:

7.2.2 Proponent

Proponent will be responsible for ensuring overall implementation of the EMP during construction as well as operational stages of the project. He will provide the requisite financial resources to the contractor and Environmental Manager / Supervisor to implement the EMP. Key responsibilities of proponent are:

- Coordinate with regulatory agencies of district and EPA
- Communicate with local community and Regulatory Authorities in order to get time to time feedback of the stakeholders on various social and environmental concerns.
- Make sure liaison between the contractor / Environmental Manager / Supervisor and Environmental Consultant to check environmental compliance with EPA requirements.

The Contractor will be responsible for the implementation of all measures necessary to ensure that environmental impacts during construction phase should be minimized. 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.
- Facilitate consultants during environmental monitoring.

7.2.3 Environmental Manager / Supervisor

The principle responsibilities included:

- To monitor on daily basis whether operational activities are carried out in an environmentally sound and sustainable manner.
- Coordination with provincial and local officials, community groups, government departments, etc. on environmental issues.
- Monitoring of the environmental aspects of project during operation to ensure that the environmental impacts and the mitigation measures proposed in the EMP are implemented.
- Undertake critically important routine and visual monitoring of waste disposal and overall environmental management practices adopted.

7.2.4 Environment Protection Agency

The Role of EPA is on the apex and includes checking:

- Whether requirements of the Environment Approval awarded by the EPA against EIA report are met.
- The implementation of mitigation recommendations as given in EPA Approval for starting actual project operations is obtained from EPA and Orderly review of audit reports prepared internally or by a third party monitor.
- Carry out environmental monitoring on quarterly basis and advise any changes in the structure or implementation method of the EMP.
- Suggest or order any appropriate solutions.

7.2.5 Auditing

The Audit will be carried out internally by the Proponent, Contractor and Environmental Manager / Supervisor. The primary aim of the auditing is to assess

compliance and effectiveness of the EMP as well as the alternative environmental and social objectives, and also to assess the effectiveness of corrective actions. Audit will also suggest remedial measures to overcome the environmental and social problems.

The external auditing will be carried out by the EPA, Punjab, in order to check compliance and implementation of EMP. The EPA will check various parameters with reference to various sections of PEPA- 1997 (amended 2012).

7.3 TRAINING SCHEDULES

TRAINING SCHEDULE OF CONSTRUCTION PHASE				
Activity	**Duration**	**Trainer**	**Venue**	**Addressee / Participants**
Work at height	1 Day	Environmental Specialist of Contractor	Onsite	20 Workers of Construction phase.
Emergency drills	1 Day	Environmental Specialist of Contractor	Onsite	20 Workers of Construction phase.
Health and Safety	1 Day	Environmental Specialist of Contractor	Onsite	20 Workers of Construction phase.
Water Sprinkling	1 Day	Environmental Specialist of Contractor	Onsite	20 Workers of Construction phase.

Briefing about EMP of construction phase	1 Day	Environmental Specialist of Contractor	Onsite	20 Workers of Construction phase.

7.4 EQUIPMENT MAINTENANCE DETAILS

Equipment maintenance details are given below:

i. Maintenance of vehicles = Daily basis
ii. Maintenance of firefighting equipment's = Weekly basis
iii. Maintenance of equipment and machinery = Annually
iv. Maintenance of Generator = Weekly basis
v. Maintenance of trees plantation and grassy area = Daily basis

7.5 ENVIRONMENTAL BUDGET

Sr. #	Activity	Budge (PRs)
1.	Personal Protective Equipments	50,000
2.	Water Sprinkling	50,000
3.	Tree Plantation and Grassy area	1,00,000
4.	Fire Fighting Arrangements	1,00,000
5.	Housekeeping	75,000
6.	Training of Workers	50,000
7.	Vehicle Maintenance	75,000

	Total	**5,00,000** **(Five Lac Pak Rupees)**

7.5.1 Mitigation and Impact Assessment

What is the problem	When will problem occur and when it should be addressed	Where problem should be addressed	How the problem should be addressed
Dust Pollution	During operational phase, it should be addressed during operational phase	During operational activities	Water Sprinkling

The following organizations would be involved in the implementation of the proposed EMP;

- Proponent of the project
- Project Contractor, as the Executor of the EMP during construction stage of the project Environmental Manger / Supervisor to monitor and execute the EMP during construction and operation stage.
- Environmental Protection Agency (EPA) Punjab, as Government Department to review and monitor the implementation of remedial and mitigation measures as given in EIA Report.

7.5.1.0 Mitigation and Impact Assessment

Purpose of Mitigation Measures should include:

- What is the problem i.e. in terms of "major environmental impacts" which may arise by the subject project activity?
- When the problem will occur and when it should be addressed.
- Where the problem should be addressed.
- And how the problem should be addressed.

The major impacts may arise by the subject project are, dust, noise, solid waste, and waste water. Other impacts are of minor importance. These impacts can arise during operation but precautionary measures have been adopted prior to start the operational activity, during the activity and post activity.

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

Project proponent will be responsible for the implementation of EMP and he has appointed as a Project Manager/Environmental Manager along with site manager to assess any impact that could be arisen during operation of the project. He is responsible to address the problem and to mitigate it.

Whys of achieving Mitigation Measures By adopting proper mitigation measures, any anticipated major or minor environmental impacts could be controlled or mitigated. The detail of impacts and mitigation measures have been discussed previous chapters.

7.5.1.1 And how the problem should be addressed

The major impacts may arise by the subject project are, dust, noise, solid waste, and waste water. Other impacts are of minor importance. These impacts can arise during operation but precautionary measures have been adopted prior to start the operational activity, during the activity and post activity. Any impact that would arise due to the

project activity will be addressed through proper channel and on site. Trainings will be conducted regarding HSE, firefighting, best work practices etc. while other precautionary measures are also adopted to make the project safe and environmental friendly.

Project proponent will be responsible for the implementation of EMP and he has appointed as a Project Manager / Environmental Manager along with site manager to assess any impact that could be arisen during operation of the project. He is responsible to address the problem and to mitigate it.

7.5.1.2 Ways of Achieving Mitigation Measures

Adopting proper mitigation measures any anticipated major or minor environmental impact could be controlled or mitigated. The detail of impacts and mitigation measures have been discussed previous chapters. Project proponent of project has been taking appropriate measures to provide pollution free and safe environment during the project activity by implementing improved management. Practices and monitoring techniques suggested in EMP. Management will further take necessary actions to mitigate any residual impacts. Project proponent of Management of unit will adopt such plan that will assure the minimum impact on the environment and health by implementing proper mitigation measures. Design of the building assures the structure stability in a long run. There was no dispute arose at the time of purchase the land and the land is the property of proponent of the project and if in future, There would arise any issue regarding environment degradation, the project proponent will compensate in terms of money as he has assured to achieve PEQS and compliance to other regulations made under PEPA 1997 (Amended 2012).

Plantation will be done within the unit and for this area is reserved. Project proponent will further develop Restoration / reclamation or tree plantation plan to restore the

project area. Plantation will be enhanced with native species within the unit, along the boundary wall and along the road side as per direction by EPA Punjab.

7.5.1.3 Improved Monitoring and Management Practices

The aim of improving monitoring is to enhance the environmental performance of the project through its enforcing the PEQs at all stages of activities as well as dealing with an emergency as and when it may occur. The objective of exercising by the management of the unit is to ensure prevention of occurrence of any situation of emergency and incase of development of such a situation, steps required to be taken to manage the situation. The section also contains a set of environmental guidelines for avoiding and or preventing the adverse environmental impacts of the project. The monitoring will be carried out in accordance with PEQs by the management. The proponent along with management will undertake monitoring of the safety, health and environmental aspect, it will be the best tool for achieving mitigation measures.

7.5.1.4 Compensation in Money Terms

There will be no affecting of the project because the land of project is owned by the proponent. The construction and operational activities at the project site will not damage inflict to any of the private properties, of the neighboring communities. Hence, no need of any sort of compensation. Not applicable in case of current project.

7.5.1.5 Replacement, Relocation and Rehabilitation

The management carrying all responsibility for cleaning and restoration will be carried out during immediately after each phase of construction and will be the responsibility of each team in their respective area of operation, if relocation of any public utility or facility will involve, it should be carried out well ahead the start of construction to avoid disruption of service to the user-community. Once the phase will over, efforts for restoring normalcy and rehabilitation should be initiated under

instructions of the appropriate authorities or the project management committee, if any existing. Cleaning and restoration will be carried out during and immediately after each phase of construction and will be the responsibility of each team in their respective area of operation. The following measures will be taken in this regard.

All pin flags, stakes, signs and refuse will be removed.

- All concrete slabs will be broken and shipped to an appropriate site outside the Project.
- Proper Area for disposal.
- Site will be cleaned so that no refuse or wastes are left behind; the waste will be properly disposed off.
- All ditches and sumps will be backfilled.
- Contaminated soil will be removed and be proper disposed off.

7.6 ENVIRONMENTAL MANAGEMENT PLAN

7.6.1 General

Before implementation, every project has to obtain environmental clearance from the appropriate quarters of the Environmental Protection Agency (EPA). The letter of environmental clearance is to be seen as a conditional agreement between the project proponent and the EPA, wherein the project proponent declares that all care would be taken to avoid causing unnecessary damage to the ambient environment while implementing the given project and the EPA accepts it. The Environmental Management Plan (EMP) is vital so that the project proponent may provide a concrete and comprehensive plan and adequate budget for environmental management. This plan should state the procedure and the manner in which the project proponent would carry out the management of environment in the context of the given project.

Keeping in view the objectives, the Environmental Management Plan has been

prepared that summarize the adverse environmental impacts of the Project and measures required to mitigate such impacts and to enhance the benefits of the Project. These have been expressed in the light of discussions on various aspects given in relevant Chapter. More specifically the EMP includes the following components:

(a) Environmental Impacts;

(b) Proposed Mitigation and Enhancement Measures;

(c) Organization responsible for implementing the EMP items;

(d) Monitoring requirements and;

(e) Organization responsible for Monitoring.

Environmental protection and enhancement are achieved in various ways. Generally speaking, these aspects need to be addressed right from the embryonic stage, i.e., I) design, specifications and tender/contract documents, ii) pre-construction phase, iii) construction activities and iv) post-completion O&M. Appropriate environmental management measures are required to be exercised in a cascading order by Client at each stage of the project.

In this way it is envisaged that the project will achieve maximum ongoing cost-effectiveness, environmental sustainability and social soundness. All stages of the project would be managed by adopting proposed environmental mitigation measures,

The crucial issues that need addressing at various stages of the project development are given in the subsequent paragraphs.

7.6.2 Design Related Issues

It is envisaged that besides considering the detail design from engineering point of view the contractors will also be reviewing and incorporating the environment related aspects.

7.6.3 Drainage Aspects

It is desirable that the drainage aspects should not only be considered from the angle of protection of building but also be reviewed from environmental standpoint. It should be ensured that appropriate drainage structures of adequate capacities are provided to avoid flooding.

7.6.4 Construction Related Impacts

The environmental and social issues relating to the construction activities and mitigation measures have been discussed in **Chapter 6**.

7.6.5 Operational and Maintenance Activities and Related Impacts

Design and construction related activities will be pursued within a pre-defined time frame. The quantum, magnitude and methodology of such like activities had made many transformational changes due to newly emerging modes of mitigation system.

Table below constitutes of an Environmental Management Plan of the project:

7.6.6 Environmental Management Plan for Construction Phase

Environmental /Social Impact	Proposed Mitigation Measures	Responsibility	Monitoring Plan/Indicator
Air pollution	• Speed and operation of	Contractor	Amount of dust produced

	construction vehicles may be controlled • Idling of vehicles may be prohibited • Excavated areas are recommended to spray with water. • It will be suggested to keep check on maintenance of construction plant and equipment. • Sensitize the construction workers. • All bare areas will be landscaped after construction. • Workers will be provided with dust masks if working in sensitive areas.		Level of landscaping carried out.
Noise Pollution	• Plant equipment is recommended to be maintained. • Construction is recommended to be carried out only during daytime i.e. 08:00 –	Contractor/ Management	Amount of noise

	17:00 hrs. • Workers will be advised to wear ear muffs if working in noisy section. • Management may ensure that noise from the residents will be kept within reasonable levels		
Traffic density	• Proper signage may put in place to notify neighbors of the activity and presence of heavy vehicles and to direct traffic. • Presence of boards directing patrons to the site. • Strict adherence to traffic rules	Contractor/ Management	Clear well maintained sign boards along the roads.
Ecological considerations (flora & fauna)	• The flora and fauna may restore after construction by landscaping and maintaining the introduced plants.	Management	Natural ecology in areas not in use
Soil erosion and compaction	• Soil conservation structures on the areas prone to soil erosion to	Contractor	Paved area and landscaped areas.

	reduce impact of erosion may be provided. • There might be designated pathways and driveways for movement within the compound to avoid unnecessary compaction. • All bare areas should be well landscaped after completion.		
Solid waste	• Construction debris will be collected by a licensed private contracted waste collection company • Excavation waste is recommended to be re-used or backfilled. • Waste generated is recommended to be collected by a privately contracted waste collection company and the contractor should ensure the construction of a central waste collection point with	Management	Presence of well-maintained receptacles and central collection point.

	storage facilities. • The site may have waste receptacles with bulk storage facilities at convenient points to prevent littering during occupation.		
Security	• Control of secondary businesses is recommended. • Round the clock security for the facility. • Adequate lighting and an alarm system will be installed at strategic points. • Bushes around and within the site will be cleared to avoid hiding areas for thieves.	Contractor/ Management	Number of businesses around the site. Level of crime in the area
First-Aid	• A well-stocked first aid kit shall be maintained by a qualified personnel	Management	Contents of the first aid kit.
Occupational Health & Safety	• Personal Protective Equipment (PPE) will be provided. • Workers shall be trained	Contractor/ Management	Workers using Protective Equipment Presence of

	on personal safety and how to handle equipments and machinery. • A well-stocked first aid kit shall be maintained by a qualified personnel • Report any accidents / incidences and treat and compensate affected workers. • Sufficient and suitable sanitary shall be provided at the project site which should be kept clean.		Well stocked First Aid Box Separate and clean washrooms (Gents & Ladies)
Loss of Vegetation	• Access pedestrian routes will be designated and parking zones that are paved. • Marked signs of do not Walk/ Park on the grass will be given. • The flora and fauna shall be restored	Contractor Management	Warning signs on site Landscaped lawns

7.6.7 Environmental Management Plan during Operational Phase

Table below constitutes Environmental Management Plan during Operational Phase of the project:

Environmental/ Social Impact	Proposed Mitigation Measures	Responsibility	Monitoring Plan/Indicator
Noise Pollution	▪ Plant equipment shall be maintained. ▪ Operation shall be carried out only during daytime. ▪ Workers will wear ear muffs when working in noisy section. ▪ Management will ensure that noise from aluminum facility's occupant is kept within permissible levels.	Contractor / Management	Amount of noise
Underground fuel storage and handling	▪ Properly maintained hoses and fittings will be used. ▪ Cement screeds in all the chambers will be made using water proof material especially in furnace. ▪ A monitoring system will be installed next to the chemical tanks (for	Contractor/ Management	Fuel spills Monitoring well

	aluminum washing) to check leaks. ▪ No spills during refilling of washing tanks or when offloading the chemical will be ensured.		
Ecological considerations	▪ The flora and fauna shall be restored after construction by landscaping and maintaining the introduced plants.	Management	Natural ecology in areas
Traffic density	▪ Signage will be put in place to notify neighbors of the activity and presence of heavy vehicles and to direct traffic. ▪ Presence of boards directing patrons to the site will be allocated. ▪ Adherence to traffic rules will be followed.	Contractor/ Management	Clear well maintained sign boards along the roads.
Solid waste	▪ Solid waste generated on site will be minimized rather it should be recycled.	Contractor/ Management	Amount of waste at site Presence of well-

	▪ Waste shall be recycled especially office papers used metal pieces. ▪ Debris shall be collected by a local contractor. ▪ Waste generated shall be collected by a privately contractor and the contractor should ensure the main central waste collection point along with bulk storage facilities. ▪ The site will have waste receptacles with bulk storage facilities at convenient points to prevent littering during occupation.		maintained receptacles and central collection point.
First aid	▪ A well-stocked first aid kit shall be maintained by a qualified personnel	Management	Contents of the first aid kit.
Security	▪ Secondary businesses are recommended to be controlled. ▪ The clock security for the facility will be under control.	Management	Number of businesses around the site. Level of crime in the area.

	▪ Adequate lighting and an alarm system will be installed at strategic points. ▪ Bushes around and within the site shall be cleared to avoid hiding areas for thieves.		
Production of Compressed Air	▪ Powder fire extinguisher will be provided in and around production halls. ▪ Regular inspection of safety valves by qualified personnel will be kept	Management	Explosions Fire Outbreak
Fire Preparedness	▪ Firefighting drills will be carried out regularly. ▪ Firefighting emergency response plan will be kept. ▪ All firefighting equipment will be ensured regularly maintained, serviced and inspected. ▪ Fire hazard signs and directions will be displayed to emergency exit route to follow and assembly point in case of	Management	Number of fire drills carried out Proof of inspection on firefighting equipment Fire Signs put up in strategic places

	any fire incidence.		Availability of firefighting equipment.
Environment Health and Safety	▪ Workers shall be trained on personal safety and disaster preparedness ▪ A well-stocked first aid kit shall be maintained by a qualified personnel ▪ Any accidents / incidences will be reported and treated and the effected worker will be compensated. ▪ Sufficient and suitable sanitary conveniences shall be provided which should be kept clean. ▪ Annual Health and Safety Audits shall be conducted.	Management	Separate washrooms (Gents & Ladies) Copies of Annual Audit
Water Consumption	• Unnecessary toilet flushing will be avoided. • Recommended to promptly detect leaking taps and repair them.	Management/ Contractor	Presence of water meter Presence of automatic water

	• Water taps shall be turned off when not in use.		taps
Electricity usage	• A meter shall be installed in the premises to check on total kilowatts used and for billing purposes. • Energy conserving bulbs/ tubes shall be used. • Natural lights shall be used for lighting purposes. • Natural ventilation from windows and doors shall be used and Electric Air Conditioner use will be avoided • A standby generator shall be provided in the premises in case of power breakdowns. • Lights will be switched off in the offices area at night	Management/ Contractor	Presence of an Electricity Meter Electricity bills
Washrooms	▪ Sufficient and suitable sanitary conveniences shall be provided. ▪ The washrooms shall be kept clean and in good	Management	Separate washrooms (Gents & Ladies)

	working conditions. ▪ A water tank shall be provided for the washrooms incase the piped water supply is not available.		
Waste Water Disposal	▪ Waste water is recommended to be emptied to the septic tank via well laid sewage pipes ▪ Inspections for sewer pipe blockages or damages will be conducted and they will be fixed on time ▪ Empty the septic tank whenever its full by a licensed exhauster service damages and fix them	Contractor/ Management	Effluent presence on open drains

7.8 ENVIRONMENTAL MONITORING PLAN

Environmental Component	Project Stage	Parameters	Special Guidance	Standards	MONITORING			Institutional Responsibility
					Location	Frequency	Duration	

Environmental Component	Project Stage	Parameters	Special Guidance	Standards	MONITORING			Institutional Responsibility
					Location	Frequency	Duration	
Air	Pre-Construction	PM_{10} SO_2 NO_X, CO, HC,O_3	Monitoring at pollution source	PEQs	Project site	Quarterly	Continuous 24 hours/or for 1 full working day	Contractor through approved monitoring agency
	Construction Stage	PM_{10} SO_2 NO_X, CO, HC,O_3	High volume sampler to be located	PEQs	Project site	Quarterly	Continuous 24 hours or for 1 full working day	Contractor through approved monitoring agency
		PM_{10}	High volume sampler to be located	PEQs	Project Site	Quarterly	Continuous 24 hours/or for 1 full working day	Contractor through approved monitoring agency

Environmental Component	Project Stage	Parameters	Special Guidance	Standards	MONITORING			Institutional Responsibility
					Location	Frequency	Duration	
	Operation Stage	PM_{10} SO_2 NO_2, CO, HO	Monitoring at pollution source	PEQs	Project site	Quarterly	Continuous 24 hours	Proponent
Water Quality	Pre-Construction	pH, BOD, COD, TDS, TSS, DO, Oil & Grease, Pb, Chlorides, zinc, cadmium, total coliforms, and faecal coliforms	Grab sample collected from source and analyze as per Standard Methods for Examination of Water and Wastewater	PEQs	Project site	Quarterly	-	Contractor through approved monitoring agency

Environmental Component	Project Stage	Parameters	Special Guidance	Standards	MONITORING			Institutional Responsibility
					Location	Frequency	Duration	
	Construction stage	pH, BOD, COD, TDS, TSS, DO, Oil & Grease, Pb, Chlorides, zinc, cadmium, total coliforms, and faecal coliforms	Grab sample collected from source and analyze as per Standard Methods for Examination of Water and Wastewater	PEQs	Project Site	Quarterly	-	Contractor through approved monitoring agency

Environmental Component	Project Stage	Parameters	Special Guidance	Standards	MONITORING			Institutional Responsibility
					Location	Frequency	Duration	
	Operation stage	pH, BOD, COD, TDS, TSS, DO, Oil & Grease, Pb, Chlorides, zinc, cadmium, total coliforms, and faecal coliforms	Grab sample collected from source and analyze as per Standard Methods for Examination of Water and Wastewater	PEQs	Project site	End of summer before the onset of monsoon every year.	-	Proponent

Environmental Component	Project Stage	Parameters	Special Guidance	Standards	MONITORING			Institutional Responsibility
					Location	Frequency	Duration	
Noise Levels	Pre-Construction	Noise levels on dB(A) scale	Equivalent noise levels using an integrated noise level meter kept at suitable distances	PEQs	Project site	Quarterly	-	Contractor through approved monitoring agency
	Construction Stage	Noise levels on dB(A) scale	Equivalent noise levels using an integrated noise level meter	PEQs	Project site	Quarterly	-	Contractor through approved monitoring agency

Environmental Component	Project Stage	Parameters	Special Guidance	Standards	MONITORING			Institutional Responsibility
					Location	Frequency	Duration	
	Operation Stage	Noise levels on dB(A) scale	Equivalent noise levels using an integrated noise level meter kept at suitable distance	PEQs	Project site	Once every year.	-	Proponent

7.9 POTENTIAL ENVIRONMENTAL ENHANCEMENT MEASURES

i) Design and Planning Stage

ENVIRONMENTAL GUIDELINES	
Design Aspects (1) Project's Design and Layout should: a) Have architectural features, to the extent possible, in conformity to general landscape of the area. b) Be in consonance with local climatic, environmental, and meteorological conditions. c) Prefer local construction materials to the maximum extent possible. d) Incorporate proper ventilation of the structures and provide for sunshine, air movement, and maximum usage of the daylight. e) Provide adequate space for movement of the workers around process machinery and installations. f) Make provisions for collection, treatment, and disposal of process wastes (solid wastes) in an environmentally sound manner by providing a well-designed process wastes handling system of appropriate capacity. g) Provide adequate structural safeguards for avoiding contact of storm water with raw materials etc. through collection, diversion, and removal of storm water runoff away from production unit and stores. h) Provide adequate arrangements for community toilets for the	• Proponent • Project Consultant / • Architect/ Design Constantan / • Project Engineer

workers at convenient locations. i) Provide construction of septic tank system for collection, treatment and disposal of toilet wastewater all during the project's construction phase. j) Provide for availability of safe drinking water for the workers at convenient locations in the project premises both during construction and the operation phase.	

i) Construction Stage

ENVIRONMENTAL GUIDELINES	
Air Quality Concerns (1) The dust producing activities (operating the machinery, loading/offloading the material) are preferably carried out at evening hours to minimize exposure of the persons working onsite and in the vicinity to high levels of dust emissions. (2) All the machinery and equipment that run on fuel oil and the vehicles engaged in connection with project construction be adequately tuned up and well serviced to avoid emission of smoke and the particulate in their exhausts. (3) Only new and unadulterated fuels and lubricants be used in the machinery and vehicles. Spent oils be avoided. (4) Operation of the fuel powered machinery and equipment be avoided in windy conditions to prevent spread of the exhaust fumes. (5) All loose materials (e.g., send, soil) be kept covered with	• Consultant • Architect/ Design Consultant / • Project Engineer

ENVIRONMENTAL GUIDELINES	
canvas/plastic sheets while staked onsite or while being transported on a carriage vehicle to avoid their flying off with air currents or vehicular movement. If sheeting is not possible, then their top layer/surface layer be lightly sprinkled with water. (6) All vehicle drivers be instructed to lower down the speed particularly on the earthen and narrow rural roads and at road bends to reduce blowing of the drag dust. (7) The active constructional areas be obscure and isolated from the exterior by vertical shields / blinds, where necessary to avoid entry of particulate dust from them into the environment.	
Water and Wastewater (1) The No water for constructional needs be drawn from a shared community water source (e.g., a canal, a community well) except with consent of the community to avoid any chances of friction with the community. (2) No wastewater be disposed of onto land, into a drain, into a watercourse, or used for irrigating the crop field unless it has been appropriately treated to conform to the untended usage. (3) All effluents and wastewaters be compulsorily subjected to treatment before their final release into the environment. (4) Throwing of the liquids / chemicals / paints / effluents into nearby water bodies or onto land be avoided. (5) Washing the machinery, vehicles, construction implements	• Consultant • Architect/ Design Consultant / • Project Engineer

ENVIRONMENTAL GUIDELINES	
into nearby surface waters be avoided. (6) All the freshwater and the wastewater pipelines be buried (or well secured if open) to avoid their accidental or mischievous damage by vehicles, animals, and or miscreants. (7) Rainfall containment structures or storm water diverting barriers / channels be provided all around the project structures to avoid direct hit of the storm water to the building / sensitive structures.	
Noise Pollution (1) The noise producing construction machinery be operated preferably during daytime so that quietness of the night is not impeached and nearby community is not disturbed. (2) The night time operation of the construction machinery, welding activities, and movement of the vehicles be avoided to the maximum possible extent. (3) The steel fixing, fabrication, welding, and loading / unloading activities be preferably carried out at the daytime hours. (4) All the machinery, equipment, generators, and the vehicles, which are a source of noise, be kept well maintained. Consider fitting a silencer to reduce noise generation, wherever required.	• Consultant • Architect/ Design Consultant / • Project Engineer
Public Utilities (1) The excavation and digging activities be carried out only after	• Consultant • Architect /

ENVIRONMENTAL GUIDELINES	
ascertaining that no gas, oil, or public utility lines are passing through or underneath the area to be excavated refer to local utilities layout map) (2) A standard operating procedure be devised for dealing with accidental damage to utilities along with an immediate restoration plan well ahead of undertaking the excavations. (3) If relocation of any public utility or facility (e.g. electricity poles) is involved, it should be carried out well ahead in the start of construction to avoid disruption of service to the user-community.	Design Consultant / • Project Engineer
Cultural and Archaeological Heritage (1) The discovery of any remnants / relics of historical, cultural, or archaeological importance during excavations or diggings be immediately reported to concerned authority / archaeology department.	• Consultant • Architect/ Design Consultant / • Project Engineer
Social Environment / Worksite Safety (1) All the working staff at the project site be made aware of the risks of personal injuries associated with construction activities and the ways of avoiding them (e.g., wearing helmets, breathing masks, earmuffs, safety goggles, gloves, etc.) (2) A first-aid box be always kept handy at the construction site all during construction and if needed an appropriate medical	• Consultant • Architect/ Design Consultant / • Project Engineer

ENVIRONMENTAL GUIDELINES	
care unit be setup during construction of the project. (3) The heads/supervisors of the various sections be made aware of the standard operating procedures for dealing with emergencies and for appropriate hazard management. (4) Indicative signage and warning boards be affixed at appropriate locations at the premises for information and guidance of the workers / employees. (5) Employing of children as laborers is avoided. (6) Firefighting arrangements are always kept ready at the worksite all during construction. (7) Lighting of matchstick or lighters and the cigarette smoking be strictly prohibited at or the workplaces and particularly near inflammable materials. (8) All ignitable and inflammable materials be separately stored at a safe distance away from any sources fire	

7.10 ENVIONMENTAL TECHNICAL ASSISSTACE AND TRAINING PLAN

In order to raise the level of professional and managerial staff, there is need to upgrade their knowledge in the related areas. HSE/ Project Manager should play a key-role in this respect and arrange the training program. Project Manager will provide training to staff and workers about the best EPA Management practices at the project site and effective implementation of EMP.

CHAPTER – 8

CONSIDERATION OF THE PROJECT ALTERNATIVES

8.1 SIGNIFICANCE OF THE ALTERNATIVES

The consideration of alternatives to a project is one of the key aspects of an Environmental Impact Assessment (EIA). Consideration of alternatives assists the decision makers in the choice of an alternative, which has the least adverse and greatest beneficial environmental, social and economic consequences.

The most pertinent question to assess feasibility and propriety of a developmental project, from environmental impacts perspective, is to ask whether an alternative option would be better than the project proposal. The comparative analysis of the environmental and economic impacts of all the possible alternative question has been objectively and analytically examined in this EIA in the light of the impacts on the physical, biological, ecological, health, and economic environment as well as views and reservations of the stakeholders (proponent and the likely beneficiaries / losers).

8.2 NO PROJECT POSSIBLE ALTERNATIVES TO THE PROJECT REASONS

In the light of the views of the stakeholders and other objective evidence:

- The site Abandonment of the project on financial and technical grounds and maintenance of the existing position (i.e., status quo or no project option).
- Changing the size and operational scope of the project site (Reducing & downsizing; or enhancing & upsizing).
- Shifting the project area to some other locations (site shifting).

- Construction of alternative network of smaller independent units at different locations in a much wider coverage area.

The above-mentioned possible alternatives are discussed below briefly:

8.2.1 Abandonment of the Project (No Project Option)

The first alternative option could be to abandon the project altogether and continue with the existing situation. This option is not supported by objective conditions & population size of the district.

8.2.2 Changing the Scope

The second alternative could be change in the scope of the project, i.e., either reduction and downsizing the size of the projector, the scope of the services or enhancing and upgrading the same. The downsizing or upsizing would include both the area of the project. The physical constraint in upsizing the project is non-availability of additional clear land at the site. On the other hand, downsizing is likely to jeopardize economic viability of the project.

According to the proponent, both these factors have been taken into account while designing the project. As such, the object evidence does not support downsizing. Since additional land is not available at the site, the upsizing option automatically becomes irrelevant, at least for the time being. Therefore, the option of change in the scope of the project is found not feasible.

8.2.3 Relocating the Project

The third possible option could be shifting, either a part or the entire project, to some other location. As mentioned in earlier, due to space constraints the project is being the undertaken at this site primarily because land is available with all the facilities at this site.

Therefore, shifting of the project to some other place in or around the city is not possible because it will be firstly non-feasible and secondly, it will not serve objectives of the projects.

8.3 SUMMARY OF THE PROJECT ALTERNATIVE OPTIONS

Based on the objective analysis, views, and opinions of the stakeholders, as detailed above, various alternative options are found not feasible. Furthermore, the net socio-environmental impacts of the project are positive. Therefore, consideration of the above-discussed alternative option is not relevant to the instant project.

8.4 FINAL SELECTION OF SITE

A critical analysis was made based on the available accessibility with Reference to land availability, accessibility of site, availability of water resources, less damage to existing environment and other environmental problem. Finally selected present site of project is more practicable with respect to economic, social and environmental perspective and future development for Plant.

CHAPTER – 9

STAKEHOLDER'S CONSULTATIONS

9.1 GENERAL

This chapter describes the process and outcome of the consultations held with the relevant stakeholders and the neighboring community over environmental aspects of the project.

Public discussions were held with the inhabitants of the surrounding area. Public consultation was conducted at site to know the point of view of the people. Majority of the people observes strong positive impacts regarding employment, business and structural development due to this project. Audit report findings depict that people perceive overall positive social and economic impacts by the project. Majority of the people are convinced for development in the area and they correlate this progress with the pace of their social mobility. Moreover, management of Plant admitted to adopt all the measures to control any impacts resulting from the subject project.

9.2 WAYS OF PUBLIC CONSULTATION

Public Consultation was done by Scoping sessions, focused group discussion, small group meetings and way side consultations with the relevant stakeholders. Multiple fieldstrips and site visits were arranged. These visits were arranged by the environmental consultant for the collection of baseline data and public consultations to know the point of views of different stakeholders regarding the project. There is no affected community present in the radius of the study area. Team visited the site, had discussions with stakeholders and consulted with the local people to evaluate the project socio-economic impacts. People provide the

massive information about the project and have positive remarks regarding the project development.

9.3 OBJECTIVES AND RATIONALE OF CONSULTATIONS

The primary objective of the stakeholders' consultations was to learn and know the apprehensions, concerns and opinions of the key stakeholders over environmental implications of the project. The consultations sessions also served as a source of first-hand information about expectations of the community and beneficiaries of the project. Dialogue with the stakeholders and recording their concerns at appropriate stages of the project can help to tailor the project in line with stakeholders' aspirations and therefore likely to promote public acceptance of the project and its sub-components.

9.3.1 Summary of Issues Raised by Stakeholders

A summary of the key issues raised by stakeholders and how these are being addressed by project proponent is provided in Table below:

During consultation it was observed that majority of the respondents were in favor of project as the wastewater is disposed off into channel and by reducing the pollution load in wastewater it will be reusable by consumers. The other related issues and concerns raised by general public are discussed. However, during the social survey following concerns of the local community, Government Departments and Environmental Practitioners and experts were noted:

- Nuisance must be controlled at source.
- Latest/State of the art technology must be adopted.
- Locals should be preferred for the job opportunities.
- Wastewater monitoring should be done regularly to comply with PEQS.

• 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 and safety of the workers should be ensured.

• Plantation of indigenous species must be carried out at extensive scale to control odor.

• Proper disposal of sludge should be adopted.

Table 1: Summary of Issues and Commitments by Proponent

Issue	Aspect/Concern raised by Stakeholders	Project Proponent Commitments
Employment Opportunities	Expectations of employment are very high. Job opportunities are less for locals as they generally have less skills and training.	Employment is the main priority of the project. Mostly, local skilled and unskilled labor will be prioritized and also there will be job in executive level. Maximum persons according to the requirement will be employed by Management

Training Opportunities	People are keen to consult with subject industry if the project offers training and upgrading opportunities to enhance their trade or professional skills.	Development of the Training Strategy, including commitment of allocation of budget investment for design, training infrastructure, and delivery.
Health & Safety	Washing tanks are main concern because the road used by the project passes through a number of small communities and different industries and there will be a high volume of transporting raw material or final products.	Development of Transport Management Plan including traffic safety training. Traffic advisory signs will be installed along project site and all nearby specific areas.
Local Economy and Business Development	Local service providers are keen to participate in providing services to transport raw material and expect in order to adjust their businesses to meet specific needs.	The management has main focus that all the material regarding construction and operation will preferred to buy from the local market.
Environmental Issues	Dust and noise impacts, from the construction activities and in operation of mechanically un-fit machines are of concern to other residents.	Implementation of control under the Environmental Management Plan, including on and off site dust and noise monitoring.

	Loss and change of vegetation due to soil degradation.	Thus, the rehabilitation plan has been established.
Water Quality and Quantity	Water quality and quantity and impacts from the wastewater disposal are all key concerns for nearby residents.	Implementation of consultation in relation to water use and development of Environmental Monitoring Program.

9.3.2 Stakeholder's Feedback

In consultation process, the stakeholders were briefed during scoping sessions about the objectives of the project. At the consultation meetings, the stakeholders and village representatives were informed about the project and project requirements. During the consultation meetings, all the stakeholders appreciated the project and expressed full support to the management.

A detailed consultative process was carried in the form of official meetings, letters, and/or telephonic discussions, to consult the stakeholders for the project.

Remarks given by stakeholders during the field survey are listed at the end of the report.

9.3.3 Concerns raised by the public

The positive concerns raised were:

• The project (Aluminum manufacturing Plant) would encourage local community for jobs.

• There will be both direct and indirect employment for the people

• New businesses will spring up and old ones will grow as a result of migration of

people (employees) in the area.

• The local economy is likely to grow through backward and forward linkages and income and employment multiplier effects resulting from the project.

• The establishment of Plant in the region will contribute to industrial development

The project will provide architectural aluminum for other small industrial Plants e.g., those manufacturing industrial spirits.

• Youth unemployment is high in the area.

9.3.4 Recommendations made by the participants

• Use of child labor on plant should be banned.

• Management should give preference to the local unemployed youths when employing workers for the project.

9.4 IDENTIFICATION OF THE RELEVANT STAKEHOLDERS

The consultation process began with identification of the most pertinent stakeholders. Efforts were made to identify the relevant stakeholders through systematic process based on the nature and degree of their actual and perceived stake in the project.

9.5 CONSULTATION METHODOLOGY

Onsite consultations were held with representatives of the various categories of the stakeholders as were available during field visits of the site for Plant. Additionally, wherever found feasible, general public visit in the vicinity were also conducted to know their views and concerns over the project activities. The majority of these consultations were either one to one meetings or small and focused group discussions.

9.5.1 Outcome of the Consultations

The neighborhood communities did not express any specific or significant concerns. Interestingly, different stakeholders had different perceptions and different concerns about the project. Some of the concerns and apprehensions relating to various aspects of the project are reproduced below:

9.5.2 Design Aspects

The design aspects need to take into account the relevant building codes, byelaws, and the applicable governmental policies.

9.6 CONSTRUCTION ASPECTS

- Delays in construction and completion of the project are likely to result into escalation of construction costs.
- Construction related noise could be troublesome for the community.
- Delays in payments to the contractors, sub-contractors, suppliers and the labour can cause delays in the project implementation.
- Interference by the local regulatory agencies and the municipal authorities are also likely to cause delays in completions.
- Delays in handing over the sites and later changes in the drawings and scope of work result into slow progress of the construction under the project.
- Generations of dust and its deposition on exposed surfaces would require frequent dusting.

9.7 OPERATIONAL ASPECTS

- There could be blackish air emissions laden with harmful particles.
- There could be disruptions and discontinuations in the supply of the machinery / equipment and raw materials for timely completions of project.

9.8 PROPONENT

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

9.9 OTHER DEPARTMENTS AND AGENCIES

For the impact analysis detailed meeting were held with the management of project and local community. Issues were discuss that may affect the environment and also the implementation of the project. All possible mitigation measures were considered and incorporated in the Environmental Management Plan (EMP). Scoping sessions, focused group discussion and way side consultations were held with the relevant stakeholders in the area. The purpose of such consultations is to obtain the feedback from the relevant persons.

9.10 AFFECTED & WIDER COMMUNITY

There is no affected community present in the radius of the study area. Team has consulted with the inhabitants of different villages. They provided positive remarks regarding the subject project and in the favor of the plant. Stakeholders participation Performa's and socioeconomic questionnaire were get filed by the locals to evaluate the project socio-economic impacts.

CHAPTER – 10

CONCLUSIONS AND RECOMMENDATIONS

10.1 CONCLUSIONS

Based on the preliminary design, environmental and social field surveys and impacts assessment of the project, it may be concluded that although there are some significant negative impacts but would be of short term during the construction stage. However, there are a few negative impacts that would be expected during the operational stage but their intensity can be reduced by taking appropriate measures. The environmental issues related with the project activities are summarized as under:

Environmental Impacts

During operation stage, disposal of waste will become a problem. Therefore, proper mitigation measures may be adopted in the preliminary design including safe and environmental friendly disposal of solid waste.

Physical Impacts

Physical impacts like soil contamination, water contamination, air pollution, high noise level, etc. are of temporary nature during the construction stage. However, during operational stage by adopting abatement technologies such as de-dusting system with bag filters and development of buffer zones and green areas intensity of negative impacts can be minimized.

Biological Impacts

No forest area or wildlife sanctuary exists within the vicinity of the project area, which may be affected by the project. Few reptiles like lizards and snakes and few

birds like Mynah and house sparrows will be disturbed by the project activities and may have to move into nearby areas. This will be a temporary insignificant impact.

Social Impacts

The other social issues like safety of general public and workers, security problems, community accessibility issue, etc. will be of temporary nature.

10.2 RECOMMENDATIONS

Although comprehensive mitigation measures have been suggested in the report to minimize the negative impacts and to enhance the positive impacts of the project, however, major recommended mitigation measures are summarized as under:

1. Dust suppression system should be available on project site for wetting of all the materials to avoid effects of dust such as respiratory diseases.
2. All appropriate environmental management measures detailed in this report, together with any other environment management commitments should be implemented throughout the entire life of the project.
3. Water contamination, air pollution and high noise levels will be controlled with the use of good engineering practices.
4. Environmental Management Plan (EMP) recommended will be implemented in the true spirit.
5. Machinery will be well-maintained for good efficiency.
6. Installed Air Pollution Control Equipment (APC) system which will be equipped with Bag Filter or any other air pollution controlled equipment.
7. First Aid measures, Health & Safety Equipment (PPEs) will be provided to the workers.

8. Safety signs or boards will be placed wherever needed within the premises of the project.

9. Personal Protective Equipment's (PPEs) will be provided and ensured that they are used by the workers during working hours.

10. High temperature zones will be highlighted.

11. Transportation vehicles will be maintained and tuned well.

12. No parameters above Punjab Environmental Quality Standards (PEQS) will be allowed in any case.

13. The parameters of the effluent will be within the permissible limits defined in the PEQS.

14. Any seepage and leakage will be controlled through proper mitigation measures.

15. Regular monitoring and auditing will be taken by the management to ensure the compliance of all the mitigation measures.

16. Proper solid waste management system must be adopted.

17. Safety signs, safety board's etc. must be placed on the project site for safety purpose of workers.

18. Plantation campaign will be initiated.