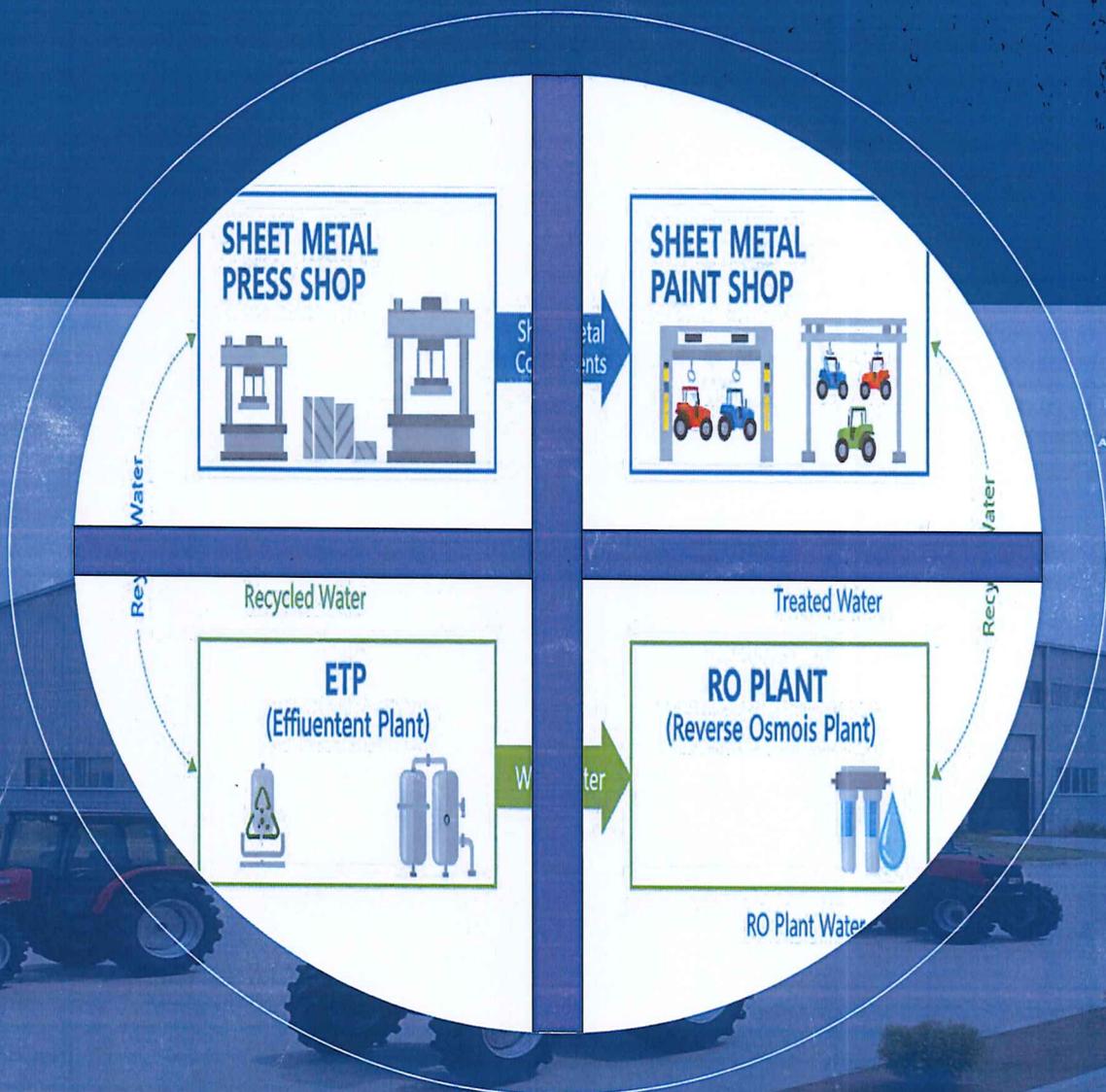


ENVIRONMENTAL IMPACT ASSESSMENT REPORT (EIA)

M/S AL-GHAZI TRACTORS LIMITED
SAKHI SARWAR ROAD, DERA GHAZI KHAN
PUNJAB



ENVIRONMENTAL SERVICES PAKISTAN PRIVATE LIMITED

Office No. 731, Block-2, Sector D-1, Shah Jilani Road Township Lahore

Tel: +92 42 35154015 - 16

URL: www.espak.com.pk | Email: info@espak.com.pk

EXECUTIVE SUMMARY

EXECUTIVE SUMMARY

The proposed project involves the Extension of Manufacturing facility at Al-Ghazi Tractors Limited in which Paint Shop, Sheet Metal Processing Plant will be extended, and there will be further installation of Reverse Osmosis (RO) Plant, Effluent Treatment Plant (ETP) by Al-Ghazi Tractors Limited, near Sakhi Sarwar Road, Dera Ghazi Khan, District, Punjab.

SALIENT FEATURES OF PROJECT:

| | | | |
|----|---------------------|---|------------------------|
| 1. | Project Title | Extension of Manufacturing Facility. | |
| 2. | Project Location | Sakhi Sarwar Road, District Dera Ghazi Khan, Punjab | |
| 3. | Proponent | Name: Mansoor Khan CNIC: 61101-1934717-7 | |
| 4. | Consultant | Environmental Services Pakistan Private Limited (ESPAK) | |
| 5. | Capacity of Project | Sheet Metal Paint Shop | 72 units per shift |
| | | Sheet metal Press Shop | 75 units per shift |
| | | Quality Building | --- |
| | | I&R Shed | --- |
| | | RO | 10 m ³ /hr |
| | | ETP | 70 m ³ /day |
| 6. | Cost of Project | Approx. 325 million | |
| 7. | Product | Tractors | |
| 8. | Status of Project | Preconstruction Phase | |
| 9. | Source of Power | MEPCO + Standby Generator | |

PROJECT OBJECTIVES

The main objectives of the project are to:

- Increase Production Capacity:
- Introduce Modern Technology:
- Improve Environmental Performance:
- Enhance Product Quality:
- Promote Socioeconomic Development:

SITE ALTERNATIVES

- The site is already owned by AGTL and has existing infrastructure, utilities, and access roads. After evaluating all alternatives,
- Option 1 — expansion within the existing AGTL premises is the most suitable and environmentally responsible choice, based on the following justifications:
 - The site is already designated for industrial use and compliant with local zoning regulations.

- No displacement of communities or acquisition of agricultural or forest land.
- All essential infrastructure (roads, power, water, drainage) is already available.

SCREENING

Section 12 of Punjab environmental protection act, 1997 amended (2017) states “No proponent of project shall commence construction or operation unless he has filed with the government agency designated by Federal Environmental Protection Agency or provincial agencies, as the case may be or, where the project is likely to cause and adverse environmental effects an environmental impact assessment (EIA), and has obtained from the government agency approval in respect thereof.” The PEPA Act provided the guidelines for categorizing the projects.

The Proposed Project, i.e., falls under Schedule-II, Category B (Manufacturing and Processing, Sub-Section 20) as "Auto mobile manufacturing and assembling unit". i.e., the project requires an EIA study. Thus, an EIA report is being prepared and submitted accordingly for approval.

ENVIRONMENTAL CONSULTANT:

An Environment Impact Assessment (EIA) study report has been prepared to identify and predict the significant environmental impacts likely to arise from the commencement of the Proposed Project, along with environmental impact statement followed by delineation of appropriate Environmental Management Plan and Environmental Monitoring Plan to have a control over the adverse environmental impacts and to check the efficiency and effectiveness of the mitigation measures being implemented. For this EIA, and to get Environmental Approval from the Environmental Protection Agency (EPA), Punjab, management of Al-Ghazi Tractors Limited has decided to engage the services of an Environmental Consultant, M/S Environmental Services of Pakistan Private Limited (ESPAK).

SCOPING

‘Scoping’ stage defines key issues that should be included in the Environmental Assessment and determines the scope, depth, and Terms of Reference for the EIA study. This is a very important step both in identifying the impacts and in identifying the scope of the EIA. Effective scoping enables:

- Defining the boundary of the EIA study
- Consulting with relevant stakeholders to identify the full range of concerns
- Focusing on key issues that characterize the existing environment in the baseline studies
- Reviewing the types of alternatives to be considered

Several groups, particularly decision makers, the local population and the scientific community, have an interest in helping to deliberate the issues which should be considered, and scoping is designed to canvass their views.

Scoping is important for two reasons: first, that problems can be pinpointed early, allowing mitigating design changes to be made before expensive detailed work is carried out, and second, to ensure that detailed prediction work is only carried out for important issues. Scoping is an ongoing exercise throughout the course of the project. Methodologies for scoping may range from interviews to the use of checklists, matrices, and network diagrams for visualization of sources and receptors of impacts and identifying which of these impacts require attention in the study. These techniques collect and present knowledge and information in a straightforward way so that logical decisions can be made about which impacts are most significant.

PROJECT OUTLINE

Al-Ghazi Tractors Limited (AGTL) is one of Pakistan's leading agricultural machinery manufacturers, providing tractors and related equipment to support the country's farming sector. To meet the increasing national demand for efficient and environmentally sustainable agricultural machinery, AGTL intends to expand its existing manufacturing facility located near Sakhi Sarwar Road, Dera Ghazi Khan, District D.G. Khan, Punjab.

The proposed project involves the Extension of the Tractors Manufacturing Facility through the addition of new production units and infrastructure. The expansion is designed to enhance the company's production capacity, introduce advanced technologies, and strengthen environmental management systems in line with national environmental standards and sustainable industrial practices.

Project Proponent

- **Name:** Al-Ghazi Tractors Limited (AGTL)
- **Head Office:** Al-Ghazi Tractors Limited, Karachi, Pakistan
- **Project Location:** Existing AGTL premises near Sakhi Sarwar Road, Dera Ghazi Khan, Punjab
- **Contact Person:** [Insert Project Manager / HSE Manager Name]
- **Nature of Project:** Industrial expansion (extension of existing manufacturing facility)

Project Components

The proposed expansion includes the following key components:

| Sr. No. | Component | Description / Function |
|---------|----------------------------------|--|
| 1 | Paint Shop | A modern, enclosed facility equipped with filtration and exhaust systems to control paint fumes and VOC emissions. |
| 2 | Sheet Metal Processing Plant | A fabrication unit for sheet metal components, including cutting, bending, and shaping machinery. |
| 3 | I&R (Inspection and Repair) Shed | A dedicated space for final inspection, rework, and quality assurance of finished tractors. |
| 4 | Reverse Osmosis (RO) Plant | A water purification unit to supply high-quality process and drinking water. |
| 5 | Effluent Treatment Plant (ETP) | A wastewater treatment facility to ensure that industrial effluent meets PEQS before discharge or reuse. |
| 6 | Utility Upgrades | Improvements in power distribution, drainage, compressed air, and fire safety systems. |
| 7 | Internal Roads and Landscaping | Development of internal circulation, parking, and greenbelt areas for environmental enhancement. |

Project Location and Accessibility

The project site is located within the **existing AGTL industrial premises** near **Sakhi Sarwar Road**, approximately **15 km from Dera Ghazi Khan city center**. The site is easily accessible via the main highway network and connected to nearby towns and industrial zones. The surrounding area primarily consists of industrial and agricultural land uses, with no significant ecological or residential sensitivities nearby.

- **Coordinates (approx.):** 30°02' N, 70°39' E
- **Nearest Settlements:** D.G. Khan City (~15 km), Sakhi Sarwar (~10 km)
- **Nearest Water Body:** Local drainage channels managed under municipal systems
- **Nearest Sensitive Receptors:** None within 1 km radius

MAJOR IMPACTS AND RECOMMENDED MITIGATION MEASURES:

Key impacts related to the operation phase include:

Air Emissions (VOCs from storage/transfer)

- *Mitigation:* Install VRUs, floating roof tanks, 3LPE pipeline coating

Noise Pollution (pumps/generators)

- *Mitigation:* Acoustic enclosures, regular maintenance, worker ear protection

Spill Risks (pipeline/tank leaks)

- *Mitigation:* Double-walled tanks, geo-membrane liners, API separator

Fire Hazards

- *Mitigation:* Dedicated fire tank, suppression systems, ESD valves

Wastewater (oily water, domestic sewage)

- *Mitigation:* Septic tanks, soak pits, oil-water separators

Solid Waste (hazardous/non-hazardous)

- *Mitigation:* Segregated disposal, EPA-approved contractors

ENVIRONMENTAL MANAGEMENT & MONITORING PLANS

The EMP includes:

Monitoring Regime:

- Air Quality (PM₁₀, SO₂, NO₂): Quarterly
- Noise Levels: Biannually
- Groundwater: Quarterly
- Equipment Integrity: Monthly inspections

Management Measures:

- PKR 1 million budget for environmental controls
- Training programs on safety and spill response
- Maintenance schedules for all critical equipment
- Record-keeping for spills/incidents

Institutional Framework:

- Dedicated HSE officer
- Third-party audits
- Compliance reporting to the Punjab EPA

CONCLUSION

The EIA confirms the project is environmentally viable when mitigation measures are implemented. Key conclusions:

- No significant ecological or social impacts anticipated
- Site selection appropriately considered alternatives
- All major operational risks have mitigation plans
- Monitoring systems will ensure ongoing compliance

Recommendations:

1. Immediate implementation of EMP
2. Regular staff training on safety protocols
3. Strict adherence to monitoring schedules
4. Punjab EPA approval with standard conditions

Glossary

Environmental Management System (EMS):

A set of management process and procedure that allows an organization to analyses and reduce the environmental impacts of its activities. Environmental Monitoring Systematic, geo-referenced observations of the environment essential to detecting changes in ecosystems over time. Environmental Protection Plan (EPP) a practical tool that describes the actions required to minimize environmental effects before, during and after project implementation. The plan may include details about the implementation of the mitigation measures identified in the environmental assessment, such as who is responsible for implementation, where the measures are intended to be implemented, and within what timeframe.

Habitat:

Land and water used by wildlife. This may include biotic and Abiotic aspects such as vegetation, exposed bedrock, water, and topography.

Impact:

Any aspect of a project that may cause an effect; for example, land clearing during construction is an impact, while a possible effect is loss and fragmentation of wildlife habitat. Indirect Effect:

An effect in which the cause-effect relationship (e.g., between the project's impacts and the ultimate effect on a Valued Ecosystem Component) has intermediary effects. As an interaction with another effect is required to have a cumulative effect (hence, creating intermediary effects), cumulative effects may be considered as indirect. Industry Relations Corporation (IRC) The Corporation or organization that a First Nation has created to manage the First Nation's relations, including Consultation with Alberta, Canada and Industry.

Mitigation:

The elimination, reduction or control of the adverse environmental effects of the project. Mitigation includes restitution for any damage to the environment caused by such effects through replacement, restoration, compensation or any other means.

Non-Renewable Resource:

Natural resources that are in fixed supply such as coal, oil and minerals.

Project:

The activity or group of activities proposed by the Proponent. The types of activities that could be subject to Alberta's environmental assessment process are listed in the Schedule of Activities in

the Environmental Protection and Enhancement Act and in the Water Act. The Project includes all associated construction, operation, decommissioning, and reclamation activities and all phases of development described by the Proponent. Project Area Project Footprint/Study Area The area includes all lands subject to direct disturbance from the project and associated infrastructure. Project Components: The different physical entities and activities that together make up the Project.

Residual Effect:

An effect that remains after mitigation has been applied

Scoping:

An activity that focuses the assessment on relevant issues and concerns and establishes the boundaries of the environmental assessment. A consultative process for identifying and possibly reducing the number of items (e.g., issues, VECs) to be examined until only the most important items remain for detailed assessment. Scoping ensures that assessment effort will not be expended in the examination of trivial effects.

Significance:

A measure of the magnitude, duration, frequency, timing, probability of occurrence, ecological and social context, geographic extent, and degree of reversibility of an effect on a Valued Ecosystem Component

Emission:

One or more substances released to the water, air or soil in the natural environment.

Environment:

Surroundings in which an organization operates, including air, water, land, natural resources, flora, fauna, humans, and their interrelations. This definition extends the view from a company focus to the global system.

List of Abbreviation

| | |
|-------|--|
| EMMP | Environment Management and Monitoring Plan |
| EPA | Environment Protection Agency |
| EPD | Environmental Protection Department |
| EIA | Environmental Impact Assessment |
| IEE | Initial Environment Examination |
| PEQS | National Environmental Quality Standards |
| NGO | Non-Government Organizations |
| NOC | No Objection Certificate |
| HSE | Health, Safety and Environment |
| PEPA | Pakistan Environment Protection Act |
| PEPC | Pakistan Environmental Protection Council |
| PMD | Pakistan Meteorological Department |
| RO | Reverse Osmosis |
| TDS | Total Dissolve Solids |
| TOR | Terms of Reference |
| WAPDA | Water and Power Development Authority |
| WASA | Water and Sanitation Agency |
| USA | United States of America |

Table of Contents

| | |
|---|----|
| Chapter 1. INTRODUCTION | 12 |
| 1.1 Background | 12 |
| 1.2 Al-Ghazi Tractors Limited – Commitment to the Machinery Market | 12 |
| 1.3 The Proposed Project..... | 12 |
| 1.4 THE PROPONENT | 19 |
| 1.5 DETAILS OF CONSULTANTS:..... | 19 |
| 1.6 PURPOSE OF REPORT..... | 19 |
| 1.7 SCOPE OF STUDY | 20 |
| 1.8 IMPACT ASSESSMENT..... | 20 |
| Chapter 2. Screening/Type and Category of Project | 22 |
| Chapter 3. DESCRIPTION OF PROJECT..... | 23 |
| 3.1 General..... | 23 |
| 3.2 Type And Category of Project..... | 23 |
| 3.3 Objectives of the Project | 23 |
| 3.4 Alternatives | 23 |
| 3.5 Vegetation Features of Site | 26 |
| 3.6 Cost And Magnitude of Operation..... | 26 |
| 3.7 Location And Layout of Project..... | 26 |
| 3.8 Relocation and Rehabilitation Plans | 28 |
| 3.9 Facility Design, Safety Systems, and Operational Infrastructure** | 28 |
| 3.10 Government Approval..... | 32 |
| Chapter 4. BASELINE ENVIRONMENTAL PROFILE..... | 33 |
| 4.1 General..... | 33 |
| 4.2 Physical Resources | 33 |
| 4.3 Geology..... | 34 |
| 4.4 Socio-economic and Cultural Features | 38 |
| 4.5 Laboratory Reports of Environmental Analysis | 38 |
| Chapter 5. POTENTIAL ENVIRONMENTAL IMPACTS AND MITIGATION MEASURES | 39 |
| 5.1 Introduction | 39 |
| 5.2 Potential Impacts..... | 39 |
| 5.3 Operational Phase Impacts and Mitigation Measures** | 41 |
| 5.4 Summary of Environmental Impacts and Mitigation Measures Matrix..... | 45 |
| Chapter 6. ENVIRONMENTAL MANAGEMENT PLAN | 47 |
| 6.1 General..... | 47 |
| 6.2 Objectives Of Environmental Management Plan | 47 |
| 6.3 Management Approach..... | 47 |
| 6.4 Components of the Emp | 48 |
| 6.5 Environment Management Plan..... | 48 |
| 6.6 Roles And Responsibilities of the Environmental Management Team..... | 52 |
| 6.7 Environmental Monitoring Plan..... | 52 |
| 6.8 Reporting And Reviewing Procedures (Communication and Documentation)..... | 55 |
| 6.9 Schedule For Implementation & Environmental Budget..... | 55 |
| 6.10 Institutional Capacity of the Unit | 56 |
| 6.11 Primary Responsibilities | 56 |

| | | |
|---|--|----|
| 6.12 | Operation Management & Control..... | 56 |
| 6.13 | Supervision & Monitoring | 56 |
| 6.14 | Communications And Documentation | 56 |
| 6.15 | Meetings | 57 |
| 6.16 | Changes-Record Register | 57 |
| 6.17 | Equipment Maintenance Details | 57 |
| 6.18 | Environment Trainings | 60 |
| Chapter 7. STAKEHOLDER CONSULTATION | | 62 |
| 7.1 | Objectives of Consultation..... | 62 |
| 7.2 | Project Location and Stakeholder Scope | 62 |
| 7.3 | Methodology of Consultation | 63 |
| 7.4 | Key Findings and Stakeholder Feedback..... | 63 |
| 7.5 | Analysis of Stakeholder Engagement..... | 63 |
| 7.6 | Conclusion..... | 64 |
| Chapter 8. CONCLUSION AND RECOMMENDATIONS | | 65 |
| 8.1 | Conclusion..... | 65 |
| 8.2 | Recommendations | 65 |

LIST OF TABLES

| | |
|---|----|
| Table 2: List of Experts | 19 |
| Table 6-1: Environmental Monitoring Plan | 54 |
| Table 6-2: Breakup of Environmental Budget..... | 55 |

LIST OF FIGURES

| | |
|---|----|
| Figure 1: Approved Layout Map..... | 19 |
| Figure 2: Approved Layout map of proposed project..... | 27 |
| Figure 4-1: Seismic Zones of Pakistan (Geological Survey of Pakistan) | 35 |
| Figure 4-2: Climate Data (Source meteoblue)..... | 36 |
| Figure 4-3: Rainfall Data (Source meteoblue) | 37 |
| Figure 4-4: Wind Speed (Source: www.meteoblue.com) | 37 |

CHAPTER 1:

INTRODUCTION

Chapter 1. INTRODUCTION

1.1 Background

Al-Ghazi Tractors Limited is undertaking an expansion project at its facility located near Sakhi Sarwar Road, Dera Ghazi Khan, District Punjab. The proposed development includes the construction of the Paint Shop and Sheet Metal Processing Plant to enhance manufacturing capacity and operational efficiency. Additionally, the installation of a Reverse Osmosis (RO) Plant and an Effluent Treatment Plant (ETP) is planned to support sustainable water management and environmental compliance. This expansion reflects the company's commitment to technological advancement, environmental responsibility, and meeting the growing demand in the agricultural machinery sector.

1.2 Al-Ghazi Tractors Limited – Commitment to the Machinery Market

Al-Ghazi Tractors Limited (AGTL) is committed to playing a pivotal role in the advancement of Pakistan's agricultural and industrial sectors by delivering high quality, reliable, and efficient tractors and implements. As a market leader, AGTL is dedicated to:

- Providing innovative, durable, and affordable agricultural machinery tailored to meet the evolving needs of farmers across the country.
- Upholding international standards of manufacturing and quality assurance, ensuring product reliability, performance, and safety.
- Strengthening customer trust and satisfaction through a robust after-sales support network, including nationwide service centers and genuine spare parts availability.
- Supporting mechanized farming to improve agricultural productivity, food security, and rural livelihoods.
- Investing in continuous improvement through technology upgrades, skilled workforce development, and expansion of manufacturing capabilities.
- Maintaining ethical business practices and sustainability, aligning with environmental regulations and contributing to national economic growth.

Through its unwavering commitment to quality, innovation, and customer service, Al-Ghazi Tractors Limited continues to reinforce its leadership in the agricultural machinery market of Pakistan

1.3 The Proposed Project

To fulfill its vision and operational objectives, **Al-Ghazi Tractors Limited**, going to increase its production capacity by making extension in the production unit of paint shop and sheet metal

processing plant. The total project is spread over **724 Kanal and 9 Marla**. The storage infrastructure comprises:

- Area for Paint Store Shop = 15,887 sq. ft
- Area for Sheet Metal Processing Shop = 36,818 sq. ft
- Area for I&R shed = 5520 sq. ft
- Designed capacity of ETP Plant = 70 M³/Day.
- Designed Capacity of RO plant = 10 M³/Hr

1.3.1 Paint Shop

Focus:

Part of a larger manufacturing or production process where items like tractor bodies, metal components, or other products are painted.

Purpose:

Applies protective and decorative coatings to manufactured goods, often using specialized equipment and techniques like electrostatic, primer application, and topcoat painting.

Key features:

May include pre-treatment processes, paint booths, ovens for drying, and quality control stations.

Chemical used:

Caustic, paint, thinner, Phosphate, and catalyst.

1.3.2 Sheet Metal press

Tractor sheet metal refers to the thin, flat pieces of metal that form the outer body of a tractor, including components like hoods, fenders, side panels, and grilles. These parts are typically made of steel and are shaped and formed to protect vital components and enhance the tractor's appearance. Sheet metal is chosen for its ability to be easily molded, its structural integrity, and its suitability for various fabrication processes.

Key Components:

- **Hoods:** Cover the engine and other vital components, often with specific designs to accommodate exhaust and other features.
- **Fenders:** Protect the wheels and surrounding areas from mud, debris, and other hazards.
- **Side Panels:** Provide structural support and enclosure for the tractor's body.

- **Grilles:** Protect the radiator and other components while allowing airflow.

Materials:

- **Steel:**

The most common material for tractor sheet metal due to its strength, durability, and ability to be formed into various shapes.

- **Aluminum:**

Used in some applications for its lightweight properties and corrosion resistance.

- **Other Metals:**

Stainless steel, brass, and copper may be used for specific parts or applications.

Fabrication Processes:

- **Cutting:**

Sheet metal is cut to the desired size and shape using various methods, including laser cutting, plasma cutting, and shearing.

- **Bending and Forming:**

Sheet metal is bent and shaped using machines like brakes and presses to create the desired contours and angles.

- **Stamping:**

Sheet metal can be stamped with dies to create complex shapes and features.

- **Welding:**

Sheet metal components are joined together using welding techniques to create larger assemblies.

Purpose:

- **Protection:**

Sheet metal protects the tractor's vital components from the elements, impacts, and other hazards.

- **Appearance:**

Sheet metal components contribute to the overall aesthetics of the tractor.

- **Structural Integrity:**

Sheet metal provides structural support and stability to the tractor's body.

- **Restoration:**

Sheet metal parts are often replaced during tractor restoration projects to restore the original appearance and functionality.

1.3.3 RO Plant

An RO plant, or Reverse Osmosis plant, is a water treatment system that uses a semi-permeable membrane to remove dissolved salts, minerals, and other impurities from water. It works by applying pressure to force water through the membrane, leaving behind contaminants. This process results in purified water suitable for various applications, including drinking, industrial processes, and more.

- **Capacity:** Designed Capacity of installed RO plant is 10 M³/HR.
- **Semi-permeable membrane:** The core component is a membrane that allows water molecules to pass through while blocking larger particles like dissolved salts, minerals, bacteria, and viruses.
- **Pressure:** Pressure is applied to the water, forcing it through the membrane.
- **Purification:** The purified water (permeate) passes through the membrane, while the concentrated contaminants (reject) are left behind.

Key components:

- **Pre-treatment filters:** These remove larger particles and sediment that could clog the RO membrane. 8 Filters are used in 1 time.
- **RO membrane:** The heart of the system, separating impurities from water. 10 membranes are use in existing plant.
- **Post-treatment:** This may include remineralization or disinfection depending on the application.
- **High-pressure pump:** Provides the force needed to push water through the membrane.
- **Control panel:** Monitors and controls the system's operation.

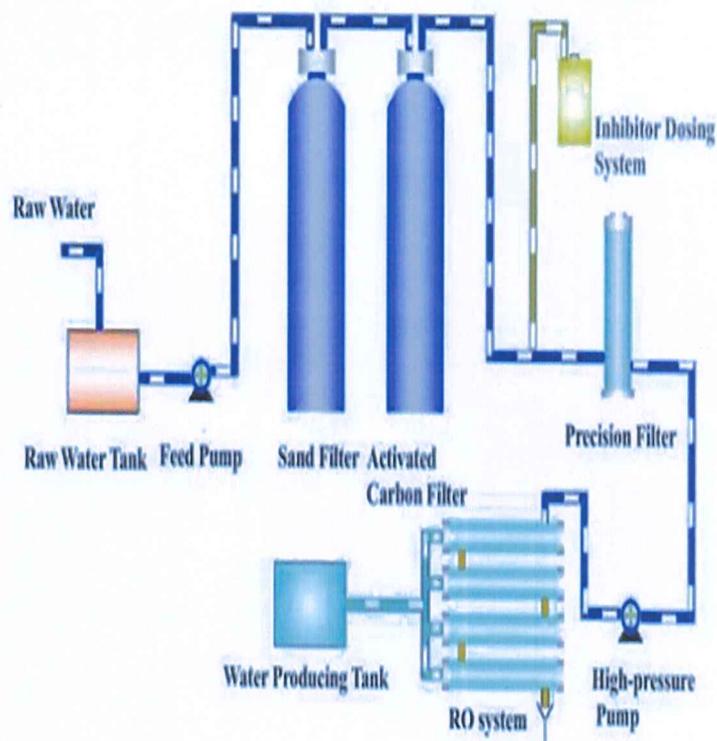


Figure 1-1: RO Flow Diagram

1.3.4 ETP Plant

An Effluent Treatment Plant (ETP) is a system designed to treat industrial wastewater, removing pollutants before discharge into the environment or for reuse. ETPs utilize various physical, chemical, and biological processes to purify the water, meeting environmental standards and minimizing harm to ecosystems. They are crucial for industries like textiles, pharmaceuticals, and chemicals, where wastewater can contain harmful contaminants.

1.3.4.1 Capacity

Designed capacity of our ETP Plant is 70 M³/Day.

Key aspects of an ETP:

1.3.4.2 Purpose

To clean and recycle industrial wastewater for safe disposal or reuse, reducing reliance on fresh water and minimizing environmental impact.

1.3.4.3 Process

ETPs involve a series of treatment stages, including preliminary treatment (screening, grit removal), primary treatment (sedimentation, coagulation, flocculation), secondary treatment (biological processes), and Clarification.

1.3.4.4 Pollutants Removed

ETPs remove a wide range of pollutants, such as suspended solids, organic matter, heavy metals, chemicals, and pathogens, depending on the specific industry and its wastewater characteristics.

1.3.4.5 Importance

ETPs play a vital role in protecting public health, safeguarding ecosystems, complying with environmental regulations, and promoting sustainable industrial practices.

1.3.4.6 Key processes

These can include screening, sedimentation, filtration, neutralization, chemical reactions, and oxidation/reduction.

Benefits of using an ETP

– **Reduced pollution:**

ETPs minimize the discharge of harmful pollutants into the environment, protecting water bodies and ecosystems.

– **Compliance:**

ETPs help industries meet environmental regulations and avoid penalties for non-compliance.

– **Public Health Protection**

ETPs remove harmful substances from wastewater, protecting public health by preventing contamination of drinking water sources.

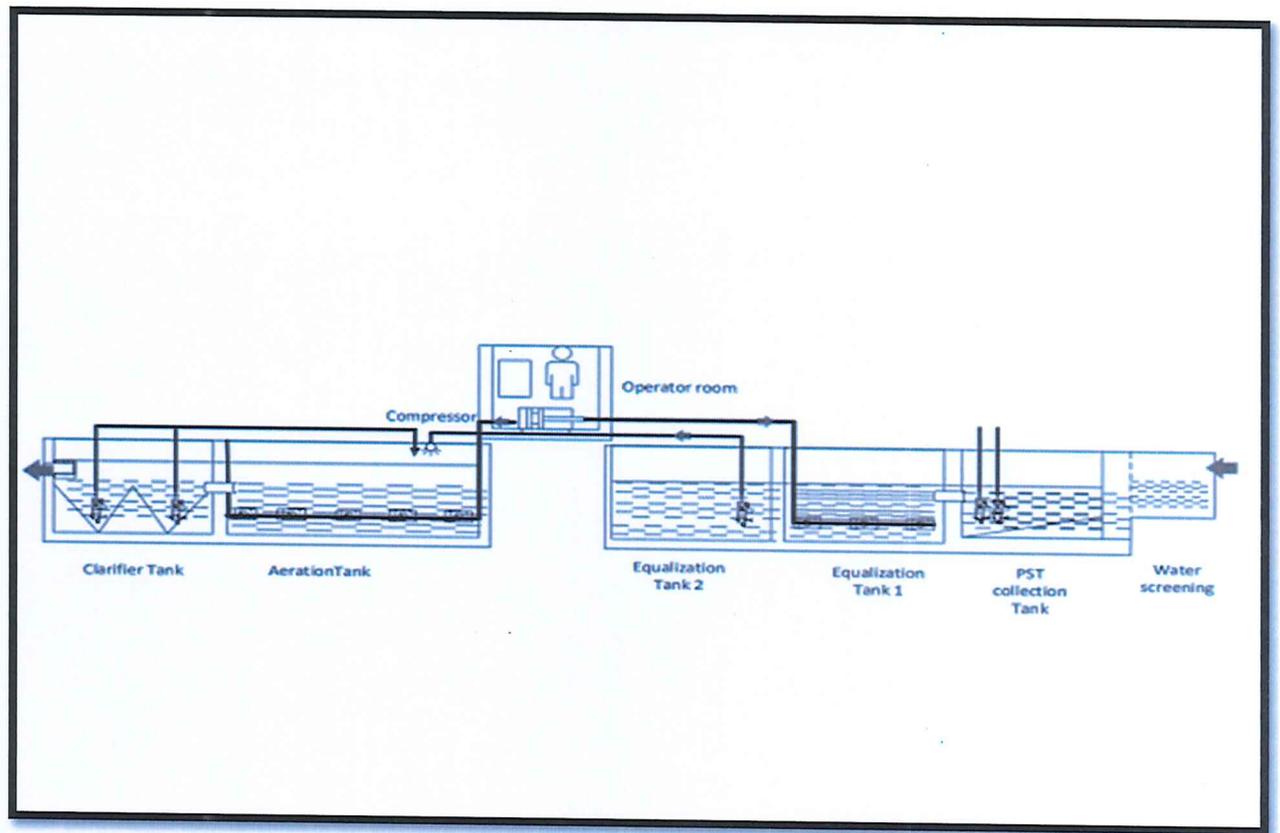


Figure 1-2: Process Flow Diagram of ETP

This Environmental Impact Assessment (EIA) evaluates the environmental and social implications of the proposed extension of the Paint Shop and Metal Sheet Processing Unit at AL-Ghazi Tractors Limited. It identifies potential environmental risks and social impacts, and proposes appropriate mitigation and monitoring measures in line with national environmental regulations and best industry practices." The report provides relevant information, as required under the officially approved format, to help the decision makers i.e., EPA Punjab before issuing for the Environmental Approval.

1.4 THE PROPONENT

| | |
|-------------------|--|
| Name of Proponent | Mansoor Khan |
| Address | Al-Ghazi Tractors Limited, Sakhi Sarwar Road, Dera Ghazi Khan. |

1.4.1 LOCATION OF PROJECT:

The project is located at Sakhi Sarwar Road, Dera Ghazi Kahn as shown in Figure 1.

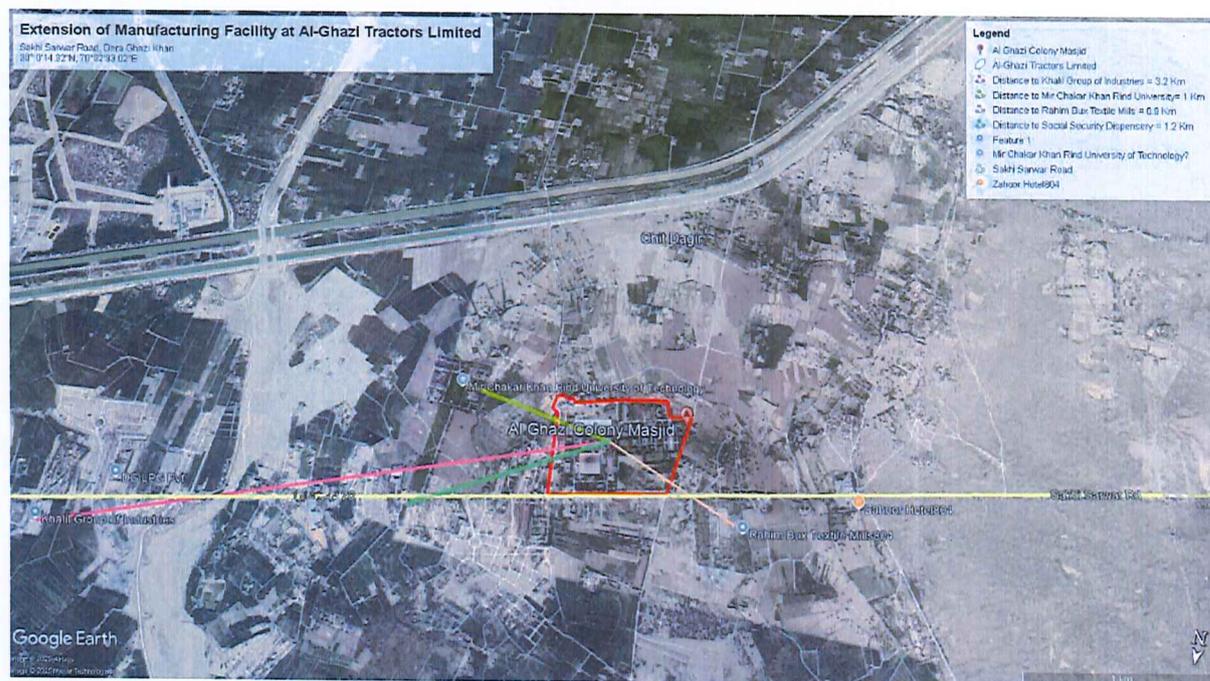


Figure 1-3: Approved Layout Map

1.5 DETAILS OF CONSULTANTS:

For the preparation of the EIA Report of this Proposed Project, the proponent has hired the services of the environmental consultants, **M/s Environmental Services Pakistan Private Limited (ESPAK)**. A team comprising environmental scientists, environmental engineers, and sociologists has worked on this report. The following table lists the names of those experts:

Table 1: List of Experts

| Sr. No. | Team Member | Position Held | Qualifications |
|---------|--------------------|------------------------------|----------------------------|
| 1. | Ali Ramzan | Lead Environmentalist | B.S Environmental Sciences |
| 2. | Ayesha Zaman | Environmentalist | M.Phil. GCSD |
| 3. | Asma Akram | Environmentalist | MS Environmental Sciences |
| 4. | Shahzad Ahmad Khan | Business Development Manager | MBA Marketing |

1.6 PURPOSE OF REPORT

The main objectives of this EIA study were:

- To determine and document the state of the environment of the project area to establish a baseline in order to assess the suitability of the Proposed Project in that area.
- To identify preconstruction, construction and operation activities and to assess their impacts on environment.
- Provide assistance to the proponent for planning, designing and implementing the project in a way that would eliminate or minimize the negative impact on the biophysical and socio-economic environment and maximizing the benefits to all parties in cost effective manner.
- To evaluate the potential effects of proposed project.
- To predict the qualitative and quantitative impacts and provide mitigatory measures as well as their reasonable alternatives.
- To assign particular roles and responsibilities to steer their behavior towards environmental awareness.
- To present Mitigation and Monitoring Plan to smoothly implement the suggested mitigation measures and supervise their efficiency and effectiveness.
- To provide opportunity to the public for understanding the project and its impacts on the community and their environment in the context of sustainable development.
- Prepare an EIA Report for submittal to the Environmental Protection Agency, Punjab for according Environmental Approval.

1.7 SCOPE OF STUDY

For the EIA study, the scope of work is as under:

- Description of physical, ecological and socio-economic conditions in and around the proposed facility. Project impact identification, prediction and significance at all stages of the project including planning, implementation and operation.
- Evaluation of needs of disposal and regional dredging.
- Identification and assessment of the workability of mitigation measures to offset or minimize negative project impacts on environment.
- Providing mitigatory measures or their appropriate alternatives.
- Identification of occupational hazards during all stages of the project and laying down suggestions for improvement in the conditions.

1.8 IMPACT ASSESSMENT

The environmental and socio-economic features and other project information collected, is used to assess the potential impacts of the activities. The issues studied include potential project impacts on:

- Geomorphology
- Meteorology
- Groundwater and surface water quality
- Soil quality
- Ambient air quality & noise level
- The ecology of the area, including flora and fauna
- Local communities

Wherever possible and applicable, the discussion covers the following aspects:

- The potential change(s) in environmental parameters likely to be affected by project related activities
- The identification of potential impacts
- The evaluation of the likelihood and significance of potential impacts
- The defining of mitigation measures to reduce impacts to as low as practicable
- The prediction of any residual impacts, including all long-term and short-term, direct and indirect, and beneficial and adverse impacts
- The drafting of monitoring arrangements of residual impacts
- The management of qualitative and quantitative impacts to avoid adverse environmental effects
- Providing environmental management plan to bring down all these impacts

CHAPTER 2:

SCREENING

Chapter 2. Screening/Type and Category of Project

Section 12 of Punjab environmental protection act, 1997 amended (2017) states “No proponent of project shall commence construction or operation unless he has filed with the government agency designated by Federal Environmental Protection Agency or provincial agencies, as the case may be or, where the project is likely to cause and adverse environmental effects an environmental impact assessment (EIA), and has obtained from the government agency approval in respect thereof.” The PEPA Act provided the guidelines for categorizing the projects.

The Proposed Project, i.e., falls under Schedule-II, **Category B (Manufacturing and Processing, Sub-Section 20) as "Auto mobile manufacturing and assembling unit"**. i.e., the project requires an EIA study. Thus, an EIA report is being prepared and submitted accordingly for approval.

CHAPTER 3:

DESCRIPTION OF THE PROJECT

Chapter 3. DESCRIPTION OF PROJECT

3.1 General

This section of the study concentrates on details of the project and its salient features; such as location, site layout, objectives, selection of alternatives, cost and magnitude of operation and various phases. Inputs and discharges relevant to different phases of project, such as electricity & materials, etc. have also been examined as a response to possible environmental concerns.

3.2 Type And Category of Project

The Proposed Project, i.e., falls under Schedule-II, Category B (Manufacturing and Processing, Sub-Section 20) as "Auto mobile manufacturing and assembling unit". i.e., the project requires an EIA study. Thus, an EIA report is being prepared and submitted accordingly for approval.

3.3 Objectives of the Project

The primary objectives of the proposed extension of the Paint Shop and Metal Sheet Processing facilities are:"

- Enhance Production Capacity
- Introduce Modern Paint Shop
- Develop In-house Sheet Metal Processing
- Ensure Sustainable Water Supply
- Promote Wastewater Treatment & Compliance
- Improve Environmental Performance
- Support the National Agricultural Sector
- Compensate to help poverty by providing employment.

M/S Al-Ghazi Tractors Limited intends "The primary objective of the proposed extension is to enhance the facility's production capacity and operational efficiency. This development aims to support increased demand, improve workflow integration between the Paint Shop and Metal Sheet Processing areas, and ensure higher quality output. Additionally, the extension will contribute to reducing production bottlenecks and supporting future growth of the manufacturing unit."

3.4 Alternatives

3.4.1 Site Alternatives

The site is already owned by AGTL and has existing infrastructure, utilities, and access roads. The proposed expansion — which includes a Paint Shop, Sheet Metal Processing Plant, I&R Shed,

Reverse Osmosis (RO) Plant, and Effluent Treatment Plant (ETP) — will be carried out within the existing premises of the operational plant.

The total project area is sufficient to accommodate the expansion without requiring additional land acquisition or relocation. The surrounding land use is predominantly industrial and agricultural, with no environmentally sensitive receptors such as schools, hospitals, or residential colonies in the immediate vicinity.

3.4.1.1 Alternatives Considered

Option 1 – Proposed Site (Within Existing AGTL Premises)

Description:

Expansion of production and support facilities within the boundaries of the existing AGTL plant.

Advantages:

- Utilization of existing industrial land (no new land acquisition).
- Availability of utilities (electricity, water, drainage).
- Existing internal roads, workshops, and safety infrastructure.
- Reduced environmental footprint due to optimized land use.
- Compliance with local zoning and industrial regulations.
- Easy monitoring and management under the same administration.

Disadvantages:

- Limited space for future large-scale expansion.
- Temporary disruption during construction within an active plant area.
- Environmental Assessment:
 - This option minimizes land disturbance, avoids natural habitat loss, and ensures efficient use of resources. Potential short-term construction impacts (dust, noise) can be easily mitigated.

Option 2 – Relocation to a New Industrial Site

Description:

Construction of a new, separate manufacturing facility at another location (e.g., an undeveloped industrial zone in or near D.G. Khan).

Advantages:

- Ample space for long-term expansion.

- Opportunity for modern, purpose-built layout.

Disadvantages:

- Significant land acquisition cost and time.
- New infrastructure (roads, utilities, drainage) required.
- Greater environmental footprint due to greenfield development.
- Increased distance from suppliers and workforce.
- Potential disturbance to virgin soil and agricultural land.
- Environmental Assessment:
 - This alternative would result in greater land clearance, resource consumption, and potential ecological disturbance. Therefore, it is not environmentally or economically preferred.

(c) Option 3 – No Project Alternative

Description:

Maintain current production capacity without any expansion.

Advantages:

- No construction-related environmental disturbance.
- No additional water or energy consumption.

Disadvantages:

- Lost opportunity for industrial growth and employment creation.
- Continued reliance on older, less efficient production systems.
- Inability to meet growing national demand for tractors.
- Missed potential for installing modern environmental control systems (ETP, RO).

3.4.1.2 Environmental Assessment

Although it avoids short-term impacts, the “No Project” option would hinder local economic development and reduce AGTL’s capacity to implement cleaner technologies.

Therefore, it is not a feasible or sustainable alternative.

3.4.1.3 Justification for the Selected Site

- After evaluating all alternatives, Option 1 — expansion within the existing AGTL premises — is the most suitable and environmentally responsible choice, based on the following justifications:
 - The site is already designated for industrial use and compliant with local zoning regulations.

- No displacement of communities or acquisition of agricultural or forest land.
- All essential infrastructure (roads, power, water, drainage) is already available.
- Cumulative environmental impacts remain within controllable limits.
- Opportunity to implement state-of-the-art pollution control systems (ETP, RO, filters).
- Reduced project cost and construction time due to existing facilities.

3.5 Vegetation Features of Site

The project site is located in a designated industrial zone with previously disturbed land. There is no significant natural vegetation on the site. Before development, the land was mostly barren with sparse grass and scattered shrubs. No ecologically sensitive flora species were observed during baseline ecological surveys. No tree cutting or habitat destruction occurred during land development.

3.6 Cost And Magnitude of Operation

Total land area: 724 Kanal 9 Marla

Total Area for Paint storage shop: 4600 sq. ft

Designed Capacity of RO plant: 10 M3/HR.

Designed Capacity of ETP plant: 70 M3/HR.

Estimated project cost: PKR 325 million, including civil works, tank fabrication, pipeline, instrumentation, and safety systems

The following fixed and working capital requirements have been identified for the operations of the proposed business. The activities will include:

- Building and Infrastructure
- Health and Safety Management at the site
- Transportation of the final product

3.7 Location And Layout of Project

The proposed project of Al-Ghazi Tractors Limited is located at Al-Ghazi Tractors Limited, Sakhi Sarwar Road, Dera Ghazi Khan. The proposed project will be spread over an area of 724 Kanal 9 Marla. The extension project will primarily include the paint shop, sheet metal processing plant, reverse osmosis plant, and effluent treatment plant. This project will be established within the existing premises of the industry and will utilize available vacant land for the construction of the new buildings.

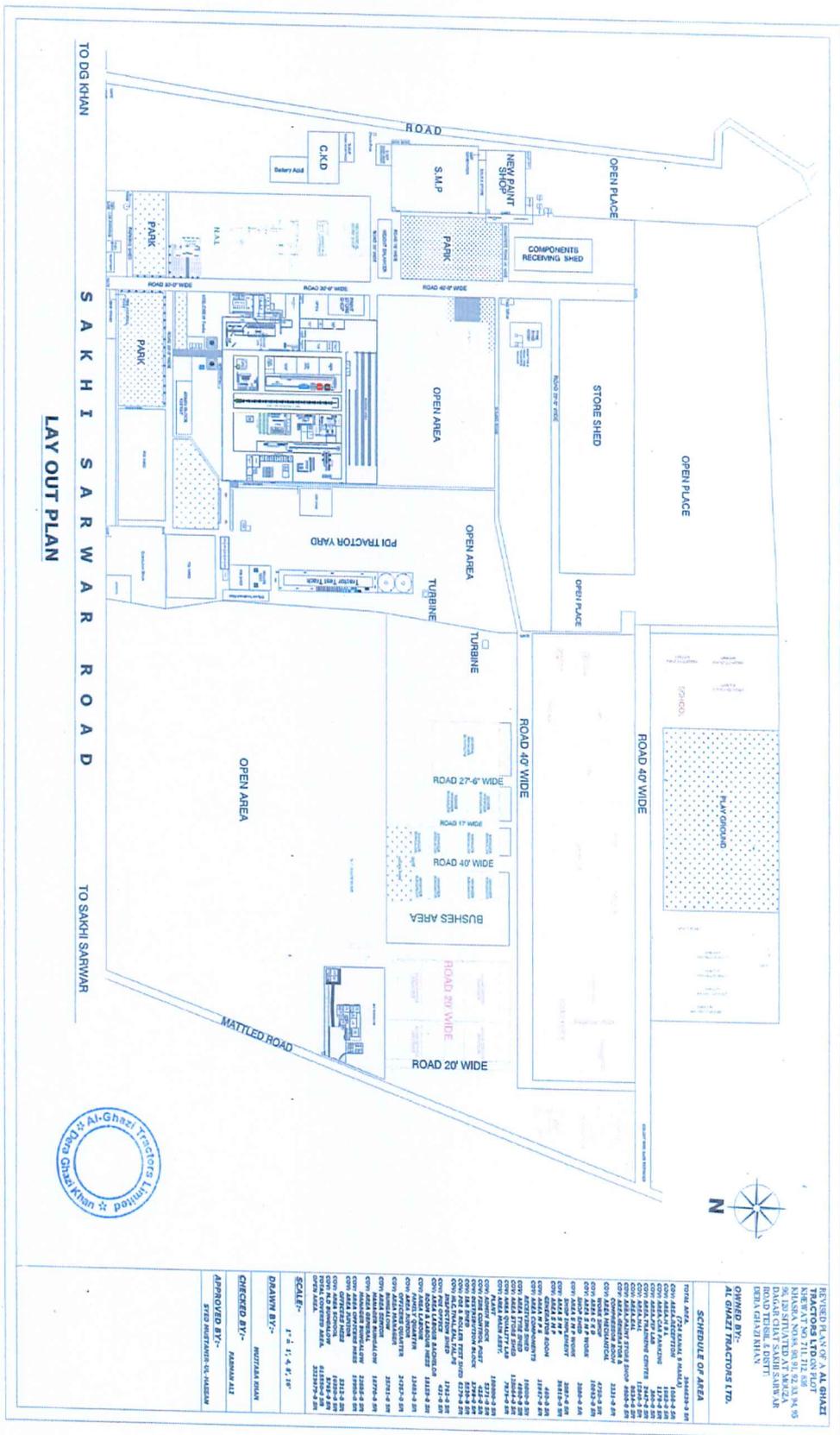


Figure 3-1: Approved Layout map of proposed project

3.8 Relocation and Rehabilitation Plans

There is no relocation or displacement involved in this project. The land for construction is already within the premises of the project as it is the matter of extension. No settlements, agricultural activity, or business units were present at the project site at the time of acquisition. Therefore, no rehabilitation plan is required.

3.9 Facility Design, Safety Systems, and Operational Infrastructure**

The proposed expansion of Al-Ghazi Tractors Limited's manufacturing facility includes the construction of a new Paint Shop and Metal Sheet Processing Unit equipped with modern, efficient, and environmentally compliant systems. The facility has been designed following international industrial safety standards and in accordance with Pakistan Environmental Protection Agency (Pak-EPA) and Punjab Environmental Quality Standards (PEQS).

The primary objectives of the facility design are to:

- Ensure worker safety and environmental protection,
- Minimize pollutant emissions and waste generation, and
- Optimize production efficiency and energy use.

3.9.1 Facility Design and Construction Activities

The facility design for the Paint Shop and Metal Sheet Processing Unit emphasizes functionality, environmental control, and occupational safety.

(a) Paint Shop Design

The Paint Shop will be a fully enclosed, ventilated structure designed to prevent fugitive emissions and ensure high-quality paint application. It will include:

Pre-treatment Section: Cleaning and degreasing of metal parts before painting.

- **Spray Booths:** Enclosed booths equipped with dry/wet scrubbers and high-efficiency particulate air (HEPA) filters.
- **Curing Oven:** Controlled temperature units for drying and curing paint.
- **Air Filtration & Exhaust System:** Multi-stage filtration and stack system to manage paint fumes and VOCs.
- **Waste Handling Area:** For collection and safe disposal of paint sludge and used filters.
- The building will be constructed using reinforced concrete and insulated steel panels, with epoxy-coated flooring for easy cleaning and spill control. All process drains will be connected to the Effluent Treatment Plant (ETP) for proper treatment.

(b) Metal Sheet Processing Unit Design

The Sheet Metal Processing Plant will house modern fabrication machinery for cutting, bending, punching, and shaping of metal parts.

Key design features include:

- Automated CNC Machines to ensure precision and reduce manual handling.
- Dust Extraction and Collection System to capture metal dust and particles at source.
- Noise Reduction Enclosures around high-decibel equipment such as presses and shears.
- Designated Material Storage Areas for raw metal sheets and finished components.
- Fire-Resistant Construction Materials and adequate emergency exits as per National Fire Protection standards.
- All construction activities will follow safe work practices, including dust suppression, proper waste management, and PPE use. Temporary noise and dust impacts during construction will be controlled using standard mitigation measures such as water sprinkling, covered transport, and restricted working hours.

3.9.2 Ancillary Equipment and Utilities

The Paint Shop and Metal Sheet Processing Unit will be supported by several auxiliary systems and utilities to ensure continuous and safe operation:

| System / Utility | Description | Environmental / Safety Measures |
|--------------------------------|---|---|
| Compressed Air System | Used for pneumatic tools and spray painting. | Equipped with silencers and automatic shut-offs to prevent leakage. |
| Ventilation and Air Handling | Ensures adequate airflow in workshops and paint booths. | Fitted with filters and exhaust stacks of adequate height to meet PEQS. |
| Water Supply System | Supplied through RO Plant for process and domestic use. | Efficient water use and recycling through ETP. |
| Effluent Treatment Plant (ETP) | Treats wastewater from paint booth cleaning and pre-treatment. | Multi-stage treatment to achieve PEQS compliance before discharge/reuse. |
| Firefighting System | Includes hydrants, extinguishers, and fire alarms across the facility. | Designed in accordance with NFPA and Pakistan Fire Safety Codes. |
| Power Supply System | Electricity from LESCO grid; backup via diesel generator (if required). | Generator only for emergency use with silencer and muffler to control noise. |
| Waste Storage Area | Designated area for temporary storage of non-hazardous and hazardous waste. | Covered and paved to prevent leachate; waste disposed through EPA-approved vendors. |

3.9.3 Operational Safety and Protection Systems

AGTL prioritizes worker health, safety, and environmental protection in all operations. The following ****safety systems**** and protocols will be implemented:

3.9.3.1 Fire Safety Measures:

- Fire detection and suppression systems (hydrants, sprinklers, fire alarms).
- Clearly marked emergency exits and evacuation routes.
- Regular fire drills and safety inspections.

3.9.3.2 Occupational Health & Safety (OHS):

- Personal Protective Equipment (PPE) such as gloves, masks, goggles, and earplugs for all workers.
- Ventilated working areas to prevent exposure to fumes and dust.
- Mandatory health and safety training for operational and maintenance staff.

3.9.3.3 Spill and Leak Prevention:

- Secondary containment for chemical storage tanks.
- Regular inspection and maintenance of pipelines and valves.
- Spill kits and absorbent materials available at key points.

3.9.3.4 Emergency Preparedness:

- On-site emergency response plan (ERP) covering fire, spill, and medical incidents.
- First aid and medical response facilities available on-site.
- Coordination with local fire and emergency services in D.G. Khan.

3.9.3.5 Noise and Vibration Control:

- Use of silencers, noise barriers, and vibration isolation pads.
- Maintenance of equipment to avoid unnecessary noise generation.

3.9.3.6 6. Training and Supervision:

- Regular safety training sessions for employees and contractors.
- Safety signage displayed in Urdu and English.
- HSE officer to oversee compliance with all safety standards.

3.9.4 Emission Control Techniques

- The proposed facility expansion integrates state-of-the-art emission control technologies to ensure compliance with PEQS and minimize environmental impact.

(a) Air Emissions

Paint Shop Emissions:

Paint booths will be fitted with multi-stage filtration systems, including dry filters and activated carbon absorbers, to capture volatile organic compounds (VOCs) and particulate matter (PM) before exhaust through stacks of adequate height.

Curing ovens will be operated with **low-sulfur fuel** and **temperature control** to minimize NO_x and CO emissions.

Metal Processing Emissions:

Metal dust and fumes generated during cutting and welding will be controlled through **local exhaust ventilation (LEV)** systems and bag filters or cyclone separators.

(b) Wastewater Emissions

All process wastewater from cleaning, degreasing, and painting operations will be routed to the Effluent Treatment Plant (ETP), which will include:

- Primary sedimentation
- Chemical coagulation and neutralization,
- Filtration, and
- Final discharge meeting PEQS
- Recycled water from the ETP may be reused for floor washing or gardening purposes.

(c) Solid and Hazardous Waste

- Paint sludge, used filters, and oily rags will be stored in sealed containers and handed over to EPA-registered hazardous waste contractors
- Metal scrap and packaging materials will be segregated and sold to recyclers
- A record of waste generation and disposal will be maintained for environmental auditing.

(d) Noise Emissions

- Noise-generating machinery will be installed in acoustically treated enclosures.
- Regular maintenance and lubrication will minimize mechanical noise.
- Workers in high-noise areas will use ear protection gear.

3.10 Government Approval

The Initial Environmental Examination of the project depicts that there will not be sufficient environmental impacts of the proposed project, so an environmental approval must be awarded.

CHAPTER 4:

**BASELINE ENVIRONMENTAL
PROFILE**

Chapter 4. BASELINE ENVIRONMENTAL PROFILE

4.1 General

This chapter outlines the baseline environmental and socio-economic conditions of the project area located at Sakhi Sarwar Road, Dera Ghazi Khan, Punjab. The data presented here has been collected through field surveys, public consultations, stakeholder interviews, secondary literature, and online environmental data sources. This information serves as the foundation for impact assessment and planning of mitigation measures.

4.2 Physical Resources

The land use in Dera Ghazi Khan and its surrounding areas is a combination of agricultural land, barren patches, scattered rural settlements, and infrastructural developments such as roads and small commercial establishments. The project site itself is largely undeveloped, with minimal existing land use activities in the immediate vicinity. However, the region is gradually experiencing development due to ongoing infrastructure improvements and increased economic activity in Dera Ghazi Khan District. This provides a strategic opportunity for industrial expansion while maintaining a buffer from densely populated or environmentally sensitive areas.

Dera Ghazi Khan, located in the southwestern region of Punjab, is an important administrative and commercial centre with a predominantly agrarian economy. The city serves as a regional hub for agricultural trade and services, supporting a large rural population engaged in farming and related activities. Its strategic location, connecting southern Punjab to Baluchistan and other parts of the country, makes it suitable for industrial development. Al-Ghazi Tractors Limited's presence near Sakhi Sarwar Road contributes significantly to the local economy by providing employment opportunities and supporting the mechanization of agriculture in the region. With ongoing infrastructure improvements and increasing industrial activity, Dera Ghazi Khan is gradually emerging as a key area for agro-industrial growth in Punjab.

According to the 2017 Census, Dera Ghazi Khan District has experienced moderate population growth compared to other regions in the country. The district's population increased significantly from previous census figures, reflecting both natural growth and gradual rural-to-urban migration. While overall population growth in Punjab has shown a slight decline, southern districts like Dera Ghazi Khan continue to record steady increases due to improving infrastructure, access to basic services, and expanding economic opportunities. The presence of industrial units such as Al-Ghazi Tractors Limited contributes to local employment and attracts workforce from surrounding rural areas, further supporting population stability and economic development in the region.

The land use in the area surrounding Al-Ghazi Tractors Limited, located near Sakhi Sarwar Road in Dera Ghazi Khan, primarily consists of agricultural fields, open barren land, and scattered rural settlements. The region maintains a predominantly agrarian character, with limited industrial and commercial development in the immediate vicinity. Infrastructure development is gradually improving, with better road connectivity and access to utilities contributing to regional growth. The project site itself remains largely undeveloped, providing ample space for the planned industrial expansion without significant disruption to existing land use patterns or surrounding communities.

4.3 Geology

The geology of the area surrounding Al-Ghazi Tractors Limited near Sakhi Sarwar Road, Dera Ghazi Khan, falls within the Sulaiman Mountain Range's foothills and the western edge of the Indus Plain. The region is characterized by sedimentary rock formations, including limestone, sandstone, and shale, primarily of Mesozoic and Cenozoic age.

In lower-lying areas, the subsurface geology consists of alluvial deposits brought by seasonal streams and river systems.

The terrain is a mix of flat plains and gently rolling land, with occasional rocky outcrops near the hills. Natural drainage is aided by the sloping landscape, although some areas may experience water accumulation during heavy rainfall.

The land is semi-arid with limited vegetation, but significant portions are cultivated, primarily for seasonal crops such as wheat, cotton, and pulses. Uncultivated or fallow land is also present, especially in areas lacking consistent irrigation.

Ecological Environment: The vegetation in the area surrounding Al-Ghazi Tractors Limited near Sakhi Sarwar Road, Dera Ghazi Khan, is typical of a semi-arid region. It primarily consists of drought-resistant grasses, wild shrubs, and scattered trees such as acacia (Kikar) and mesquite (Prosopis). **Agricultural activity** in nearby areas has led to the cultivation of crops, but natural vegetation remains sparse due to low rainfall and limited water availability. There are no protected forests, wildlife reserves, or ecologically sensitive areas within the immediate vicinity of the project site.

Topography: The topography of the area surrounding Al-Ghazi Tractors Limited near Sakhi Sarwar Road, Dera Ghazi Khan, is generally flat to gently undulating, characteristic of the transitional zone between the Indus Plain and the foothills of the Sulaiman Range. The land features minor elevation changes with occasional low-lying areas and scattered rocky patches near the hills. Due to its moderate elevation and natural drainage patterns, the area is not

significantly prone to flooding, although localized water accumulation may occur during periods of intense rainfall.

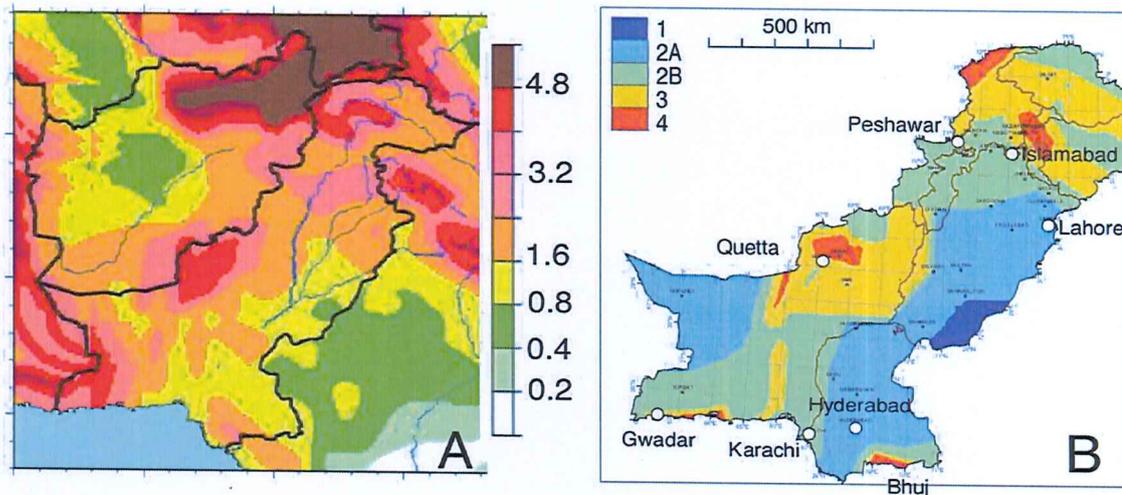


Figure 4-1: Seismic Zones of Pakistan (Geological Survey of Pakistan)

Soil: The soils in the area surrounding Al-Ghazi Tractors Limited near Sakhi Sarwar Road, Dera Ghazi Khan, are predominantly alluvial in origin, with a texture ranging from sandy-loam to clay-loam. These soils are generally suitable for agriculture, particularly for crops such as wheat, cotton, and pulses. Soil fertility varies depending on irrigation availability and the use of fertilizers or organic matter. Drainage is moderate, although some areas may experience surface water retention after heavy rains due to uneven terrain and limited vegetative cover. Soil erosion is minimal but can increase near sloped or uncultivated land, especially during the monsoon season.

Surface water Rivers: There are no major perennial rivers flowing directly through the project site near Sakhi Sarwar Road. However, the region is influenced by seasonal watercourses, including hill torrents and local nullahs originating from the nearby Sulaiman Range. These streams are typically dry for most of the year and only carry significant flow during the monsoon season or periods of intense rainfall. These seasonal surface water bodies play an important role in local drainage and groundwater recharge but are not reliable sources of year-round surface water.

Climate & Rainfall: Dera Ghazi Khan experiences a **hot semi-arid climate**, characterized by extremely hot summers and mild to cool winters. Summer temperatures can exceed **45°C**, particularly from May to July, while winter temperatures may drop to around **5°C** during December and January. The region receives **low to moderate rainfall**, primarily during the monsoon season from **July to September**, with an average annual rainfall of approximately **200–**

