Contents

Executive Summary

1. Title and Location of the Project

- **Project Title**: Proposed Construction of Petroleum Products Storage Unit.
- **Location**: Khewat No. 118, Khatooni No. 409 to 417, Muraba No. 30, Killa No. 2, 3, At Mouza Manawala Narsingh, Manawala - Safdarabad Road, 3-Km Safdarabad Road, Manawala Sheikhupura, Near Iqbal Nagar, Tehsil and District Sheikhupura.
- **GPS Coordinates**:
    - Latitude: 31°36'34.0"N
    - Longitude: 73°37'59.7"E

2. Name of the Proponent

- **Proponent Name**: Ahsan-ul-Haq.
- **Office Address**: Chak No. R. B, Faisalabad.
- **Contact Information**:
    - Email: ahsanpk1977@gmail.com
    - Cell: 0322-6061466
    - Office: 041-8520454-55

3. Name of the Organization Preparing the Report

- **Consultant Name**: Pak Green Enviro-Engineering Services.
- **Address**: 46-M, Gullberg III, Lahore
- **Contact Information**: 0303-4442334

4. Brief Outline of the Proposal

The proposed project involves the construction and operation of a **state-of-the-art, environment-friendly Petroleum Products Storage Unit** with the following details:

- **Type of Project**: Petroleum storage facility.
- **Process**: Receiving, storing, and distributing petroleum products, including furnace oil, kerosene oil, light diesel oil, mineral turpentine oil, and solvent oil (naphtha).
- **Technology**:
    - Double-walled storage tanks to prevent leakage.
    - Vapor recovery systems to minimize VOC emissions.
    - Spill containment systems to prevent contamination.
    - Fire safety systems to ensure safety.

- **Land Requirement**: The total area of the unit is **2 Kanals, 2 Marlas, and 163 square feet**.

5. Major Impacts

The project is expected to have the following environmental and social impacts:

5.1 Environmental Impacts

1. **Air Quality**:
    - Emissions of volatile organic compounds (VOCs) during storage and handling.
    - Dust generation during the construction phase.
2. **Water Resources**:
    - Risk of groundwater contamination due to potential spills or leaks.
    - Water consumption during construction and operation.
3. **Soil Quality**:
    - Soil contamination due to accidental spills.
    - Soil erosion during the construction phase.
4. **Biodiversity**:
    - Minimal impact on local flora and fauna due to the absence of ecologically sensitive habitats.
5. **Noise Pollution**:
    - Noise generated during construction and operation of machinery.
6. **Waste Generation**:
    - Construction waste, domestic waste, and hazardous waste during operation.

5.2 Socioeconomic Impacts

1. **Positive Impacts**:
    - Creation of employment opportunities during construction and operation.
    - Contribution to the local economy through efficient distribution of petroleum products.
2. **Negative Impacts**:
    - Potential health risks to nearby communities due to air and water pollution.

6. Recommendations for Mitigation Measures

To minimize the potential impacts, the following mitigation measures are recommended:

1. **Air Quality Management**:
    - Install vapor recovery systems and dust suppression measures.
    - Regularly monitor air quality.
2. **Water Resource Protection**:
    - Implement spill containment systems and treat wastewater before discharge.
    - Conduct regular water quality monitoring.
3. **Soil and Land Management**:
    - Prevent soil erosion and contamination through proper construction practices.
4. **Waste Management**:
    - Segregate and dispose of waste through licensed waste management companies.
    - Recycle packaging materials and other recyclable waste.
5. **Noise Control**:
    - Use noise barriers and schedule noisy activities during daytime hours.
6. **Community Engagement**:
    - Conduct regular consultations with local communities and provide information about the project.
7. **Emergency Preparedness**:
    - Develop and implement a spill response plan and fire safety systems.

7. Proposed Monitoring

To ensure compliance with environmental standards and project commitments, the following monitoring plan is proposed:

1. **Environmental Monitoring**:
    - Regularly monitor air quality, water quality, noise levels, and waste management.
    - Submit monitoring reports to the EPA and other relevant authorities.
2. **Compliance Audits**:
    - Conduct periodic audits to ensure compliance with environmental regulations.
3. **Stakeholder Communication**:
    - Maintain open communication with stakeholders and provide updates on project progress.

Table ES.1: Summary of Key Project Details

Parameter	Details
Project Title	Proposed Construction of Petroleum Products Storage Unit
Location	Mouza Manawala Narsingh, Sheikhupura
Proponent	Ahsan-ul-Haq
Consultant	Pak Green Enviro-Engineering Services
Project Type	Petroleum storage facility
Technology	Double-walled tanks, vapor recovery systems, spill containment, fire safety
Land Requirement	2 Kanals, 2 Marlas, 163 square feet
Major Impacts	Air quality, water resources, soil quality, noise, waste generation
Mitigation Measures	Air quality management, water protection, waste management, noise control
Monitoring Plan	Environmental monitoring, compliance audits, stakeholder communication

Conclusion

The proposed **Petroleum Products Storage Unit** is a well-planned project that balances economic development with environmental protection. By implementing the recommended mitigation measures and monitoring plans, the project can achieve its objectives while minimizing adverse impacts on the environment and local communities. It is recommended that the **Environmental Protection Agency (EPA)** may grant the necessary approvals and **No Objection Certificate (NOC)** for the project to proceed.

Chapter 1

Introduction

1.1 Purpose of the Report

The purpose of this Environmental Impact Assessment (EIA) report is to assess and evaluate the potential environmental and social impacts associated with the proposed construction of a petroleum storage unit by Cozy Energy Private Limited. This assessment is conducted in compliance with the **Pakistan Environmental Protection Act (PEPA), 1997 (Amended 2022)** and the relevant **Punjab Environmental Protection Agency (EPA) Regulations**.

The project proponent intends to obtain a **No Objection Certificate (NOC)** for the **construction phase** of the petroleum storage unit. This report aims to:

- Identify potential environmental, social, and health-related impacts of the project.
- Propose mitigation measures to minimize negative environmental effects.
- Ensure regulatory compliance with environmental laws and guidelines.
- Support decision-making by relevant authorities regarding project approval.

This project falls under **Schedule II of the Punjab Environmental Protection Agency (EPA) Regulations** and requires an **Environmental Impact Assessment (EIA) under Category A(5)**, which covers **petroleum storage and handling facilities**.

1.2 Identification of Project and Proponent

Project Details:

Parameter	Details
Project Name	Proposed Construction of Petroleum Products Storage Unit
Location	Khewat No. 118, Khatooni No. 409 to 417, Muraba No. 30, Killa No. 2, 3, Mouza Manawala Narsingh, Manawala - Safdarabad Road, **3-Km Safdarabad Road, Manawala, Sheikhupura**, near Iqbal Nagar, **Tehsil and District Sheikhupura**.
GPS Coordinates	**31°36'34.0"N, 73°37'59.7"E**
Total Project Area	**2K-2M-163 feet**
Project Cost	Approx. **PKR 150 million**
Nature of Project	Establishment of an environmentally friendly, clean, and green petroleum storage unit.

Scope of Work	Storage of **different petroleum products** in designated tanks.
Storage Capacity	
Furnace Oil (HP)	**47,316 Liters**
Kerosene Oil (NDP)	**44,951 Liters**
Light Diesel Oil (NDP)	**44,951 Liters**
MTT (NDP)	**44,951 Liters**
Solvent Oil (Naphtha)	**44,951 Liters**

Proponent Details:

Parameter	Details
Proponent Name	Ahsan-ul-Haq
Office Address	Chak No. R.B, Faisalabad
Email	ahsanpk1977@gmail.com
Contact Numbers	0322-6061466 041-8520454-55

1.3 Details of Consultant

The **EIA report** has been prepared by **Pak Green Enviro-Engineering (Pvt.) Limited**, an environmental consultancy firm specializing in **Environmental Impact Assessments (EIA)** and **Initial Environmental Examinations (IEE)** in accordance with **Punjab EPA Regulations**.

Consultant Details:

Parameter	Details
Name	Pak Green Enviro-Engineering (Pvt.) Limited
Office Address	46-M, Gulberg III, Lahore
Email	pak.green@hotmail.com
Contact Number	0303-4442334

1.4 Brief Description of Nature, Size, and Location of the Project

Nature of Project:

The proposed project involves the **construction of a petroleum storage unit** that will **store, handle, and manage petroleum products** in an environmentally sustainable manner. The facility will be designed to ensure **safe and secure storage** of **flammable liquids** while minimizing environmental risks.

Project Size and Infrastructure:

Parameter	Details
Total Area	**2K-2M-163 feet**
Storage Capacity	Approx. **227,070 Liters** across multiple tanks.
Power Requirement	Sourced from **WAPDA**.
Water Requirement	
During Construction	**220-250 m3/day**
During Operation	**600 m3/day**
Labor Force	
During Construction	**30-35 workers**
During Operation	**20-25 workers**
Solid Waste Generation	
Construction Phase	**Construction debris and 0.45kg/capita/day of domestic solid waste**
Operational Phase	**Drums, packaging materials, process-related waste, and domestic waste**

Project Location and Accessibility:

The project site is strategically located **3 km from Safdarabad Road, Manawala, Sheikhupura**, near **Iqbal Nagar**. The area is well-connected to **transportation networks**, facilitating **easy access for raw material supply, distribution, and emergency response teams**.

Environmental Considerations:

The project is designed to meet **national and international environmental standards**, incorporating **state-of-the-art safety measures** to ensure **minimal environmental impact**. The site selection ensures that **no significant ecological, social, or cultural heritage sites are disturbed**.

Conclusion:

The proposed **petroleum storage unit** by **Cozy Energy Private Limited** will play a crucial role in **strengthening fuel supply infrastructure** while adhering to **strict environmental and safety regulations**. This **EIA report** provides a **comprehensive assessment** of the **potential environmental impacts**, ensuring that the project remains **sustainable, compliant, and beneficial to the region**.

Screening

Determination of IEE or EIA Requirement

2.1 Screening Process

The screening process is conducted to determine whether the proposed project requires an **Initial Environmental Examination (IEE)** or a **Full Environmental Impact Assessment (EIA)** as per the **Pakistan Environmental Protection Act (PEPA) 1997** and the **Environmental Protection Agency (EPA)** regulations. The screening is based on the nature, size, location, and potential environmental impacts of the project.

2.2 Criteria for Screening

According to the **EPA Regulations**, projects are categorized into:

1. **Projects requiring an IEE**: Smaller-scale projects with limited environmental impacts.
2. **Projects requiring an EIA**: Larger-scale projects with significant environmental impacts, particularly those involving hazardous materials, large land use changes, or located in environmentally sensitive areas.

The proposed **Petroleum Products Storage Unit** falls under the category of projects involving **storage of hazardous materials (petroleum products)** and is therefore subject to a detailed assessment.

2.3 Project Categorization

The proposed project involves:

- **Storage of Petroleum Products**: The facility will store significant quantities of petroleum products, including furnace oil, kerosene oil, light diesel oil, mineral turpentine oil, and solvent oil (naphtha).
- **Location**: The project site is located in **Mouza Manawala Narsingh, Sheikhupura**, which is not in an ecologically sensitive area but is near residential and agricultural zones.
- **Scale**: The project has a storage capacity of approximately **272,071 liters** and covers an area of **2 Kanals, 2 Marlas, and 163 square feet**.
- **Potential Environmental Impacts**: The project may have impacts on air quality, water resources, soil, and biodiversity during both the construction and operational phases.

2.4 Determination of EIA Requirement

Based on the **EPA Regulations** and the nature of the project, the proposed **Petroleum Products Storage Unit** requires a **Full Environmental Impact Assessment (EIA)** due to the following reasons:

1. **Hazardous Materials**: The storage of petroleum products involves hazardous materials that pose risks to the environment and human health.
2. **Scale of Operations**: The project has a significant storage capacity and operational scale, which may lead to substantial environmental impacts.
3. **Potential Impacts**: The project may affect air quality, water resources, soil, and local biodiversity, necessitating a comprehensive assessment.
4. **Regulatory Requirement**: As per **Schedule II of PEPA 1997** and **Regulation A(5) of the Environmental Protection Agency (EPA) Regulations, 2022**, projects involving petroleum storage and handling are categorized as requiring an EIA.

2.5 Conclusion

The proposed **Petroleum Products Storage Unit** by **Cozy Energy Private Limited** requires a **Full Environmental Impact Assessment (EIA)** as per the **Pakistan Environmental Protection Act (PEPA) 1997**, **Schedule II**, and **Regulation A(5) of the EPA Regulations, 2022**. The EIA will assess the potential environmental impacts of the project and propose mitigation measures to ensure compliance with environmental standards.

Table 2.1: Screening Summary

Parameter	Details
Project Type	Petroleum Products Storage Unit
Hazardous Materials	Yes (Furnace Oil, Kerosene Oil, Light Diesel Oil, Mineral Turpentine Oil, Solvent Oil)
Location	Mouza Manawala Narsingh, Sheikhupura (Non-sensitive area)
Scale of Operations	Storage Capacity: 272,071 liters; Area: 2 Kanals, 2 Marlas, 163 sq. ft.
Potential Environmental Impacts	Air quality, water resources, soil, biodiversity, and human health
Regulatory Requirement	Full Environmental Impact Assessment (EIA) as per **Schedule II of PEPA 1997** and **Regulation A(5) of EPA Regulations, 2022**

Table 2.2: Regulatory Compliance

Regulation	Description
PEPA 1997, Schedule II	Lists projects requiring an EIA, including petroleum storage facilities.
EPA Regulations, 2022, Regulation A(5)	Specifies that petroleum storage projects require an EIA due to their potential environmental impacts.

This concludes the **Screening** section of the EIA Report. The next sections will include the **Scoping** process, **Baseline Environmental Conditions**, and **Impact Assessment**.

Scoping

Identification of Key Environmental Issues and Assessment Boundaries

3.1 Spatial and Temporal Boundaries of Environmental Assessment

Spatial Boundaries

The spatial boundaries for the environmental assessment of the proposed **Petroleum Products Storage Unit** are defined as follows:

- **Primary Zone (Project Site)**: The project site covering **2 Kanals, 2 Marlas, and 163 square feet** at Mouza Manawala Narsingh, Sheikhupura.
- **Secondary Zone (Surrounding Area)**: A radius of **5 km** around the project site, encompassing nearby residential areas, agricultural lands, water bodies, and transportation routes.
- **Tertiary Zone (Regional Area)**: The broader region of Sheikhupura District, including potential impacts on regional air quality, water resources, and biodiversity.

Temporal Boundaries

The temporal boundaries for the environmental assessment are divided into two phases:

1. **Construction Phase**: Approximately **6-8 months**, during which site preparation, construction of storage tanks, and installation of facilities will occur.
2. **Operational Phase**: The operational lifespan of the project, estimated to be **20-25 years**, during which petroleum products will be stored and managed.

3.2 Important Issues and Concerns Raised During Consultation

During the scoping phase, consultations were held with stakeholders, including local communities, regulatory authorities, and environmental experts. The following key issues and concerns were identified:

1. **Air Quality**:
    - Potential emissions of volatile organic compounds (VOCs) and particulate matter during the operational phase.
    - Dust generation during the construction phase.
2. **Water Resources**:
    - Risk of groundwater contamination due to potential leakage or spillage of petroleum products.

- Water consumption during construction and operation phases.

3. **Soil Quality**:
   - Soil contamination due to accidental spills or improper handling of petroleum products.
   - Soil erosion during the construction phase.
4. **Biodiversity**:
   - Potential impacts on local flora and fauna due to habitat disturbance during construction.
   - Risk of contamination of nearby water bodies affecting aquatic life.
5. **Noise Pollution**:
   - Noise generated during construction activities and operation of machinery.
6. **Waste Management**:
   - Generation of construction waste, domestic waste, and hazardous waste during operation.
7. **Socio-Economic Impacts**:
   - Employment opportunities for local communities during construction and operation.
   - Potential health risks to nearby residents due to air and water pollution.

3.3 Significant Impacts and Factors to be Determined

The following significant environmental impacts and factors will be assessed in detail during the EIA process:

1. **Air Quality**:
   - Baseline air quality monitoring.
   - Assessment of emissions from storage tanks and vehicles.
   - Mitigation measures for dust and VOC emissions.
2. **Water Resources**:
   - Baseline groundwater and surface water quality.
   - Assessment of water consumption and wastewater generation.
   - Mitigation measures for spill prevention and control.
3. **Soil Quality**:
   - Baseline soil quality assessment.
   - Risk of soil contamination and erosion.
   - Mitigation measures for soil protection.
4. **Biodiversity**:
   - Baseline assessment of local flora and fauna.
   - Impact of habitat disturbance and contamination.

- Mitigation measures for biodiversity conservation.

5. **Noise Pollution**:
   - Baseline noise levels.
   - Assessment of noise during construction and operation.
   - Mitigation measures for noise control.
6. **Waste Management**:
   - Quantification of construction and operational waste.
   - Assessment of hazardous waste management practices.
   - Mitigation measures for waste reduction and disposal.
7. **Socio-Economic Impacts**:
   - Assessment of employment opportunities.
   - Evaluation of potential health risks to local communities.
   - Mitigation measures for community engagement and health protection.

Table 3.1: Scoping Summary

Parameter	Details
Spatial Boundaries	- Primary Zone: Project site (2 Kanals, 2 Marlas, 163 sq. ft.)
	- Secondary Zone: 5 km radius around the site
	- Tertiary Zone: Sheikhupura District
Temporal Boundaries	- Construction Phase: 6-8 months
	- Operational Phase: 20-25 years
Key Issues and Concerns	- Air quality, water resources, soil quality, biodiversity, noise pollution, waste management, socio-economic impacts
Significant Impacts	- Emissions, water contamination, soil erosion, habitat disturbance, noise, waste generation, health risks

Table 3.2: Stakeholder Consultation Summary

Stakeholder	Key Concerns Raised
Local Communities	- Health risks from air and water pollution
	- Employment opportunities
Regulatory Authorities	- Compliance with PEPA 1997 and EPA Regulations
	- Proper waste management and spill prevention
Environmental Experts	- Impact on biodiversity and water resources
	- Mitigation measures for emissions and contamination

This concludes the **Scoping** section of the EIA Report. The next sections will include the **Baseline Environmental Conditions**, **Impact Assessment**, and **Mitigation Measures**.

Chapter 2

Consideration of Alternatives

2.1 Site Alternatives, Their Selection, and Rejection Criteria

Site Selection

The proposed site for the **Petroleum Products Storage Unit** at **Mouza Manawala Narsingh, Sheikhupura**, was selected after careful consideration of various factors, including:

- **Proximity to Transportation Routes**: The site is located near the Manawala-Safdarabad Road, ensuring easy access for the transportation of petroleum products.
- **Availability of Utilities**: The site has access to essential utilities such as electricity (WAPDA) and water supply.
- **Land Availability**: The site provides sufficient space (2 Kanals, 2 Marlas, and 163 square feet) for the construction and operation of the storage unit.
- **Environmental Sensitivity**: The site is not located in an ecologically sensitive area, minimizing potential impacts on biodiversity and natural resources.

Rejection of Site Alternatives

No alternative sites were considered for the following reasons:

1. **Proximity to Demand Centers**: The selected site is strategically located near industrial and residential areas, ensuring efficient distribution of petroleum products.
2. **Infrastructure Availability**: Alternative sites lacked access to necessary infrastructure, such as roads, electricity, and water supply.
3. **Land Ownership**: The proponent already owns the selected site, eliminating the need for land acquisition and associated delays.
4. **Environmental Considerations**: Alternative sites were either located in ecologically sensitive areas or posed higher risks of environmental contamination.

2.2 Design/Technology Alternatives, Their Selection, and Rejection Criteria

Design and Technology Selection

The project will utilize **state-of-the-art, environment-friendly technologies** for the construction and operation of the storage unit. Key design and technology features include:

- **Double-Walled Storage Tanks**: To prevent leakage and ensure safe storage of petroleum products.
- **Spill Containment Systems**: To mitigate the risk of accidental spills and contamination.
- **Vapor Recovery Systems**: To minimize emissions of volatile organic compounds (VOCs) during storage and handling.
- **Fire Safety Systems**: To ensure compliance with safety standards and prevent fire hazards.

Rejection of Design/Technology Alternatives

No alternative designs or technologies were considered for the following reasons:

1. **Compliance with Standards**: The selected design and technologies comply with national and international standards for petroleum storage facilities.
2. **Environmental Benefits**: The chosen technologies are designed to minimize environmental impacts, such as emissions and contamination.
3. **Cost-Effectiveness**: The selected design and technologies provide the best balance between environmental performance and economic feasibility.

2.3 Environmental Alternatives, Their Selection, and Rejection Criteria

Environmental Considerations

The project has incorporated several environmental measures to minimize its impact, including:

- **Waste Management Plans**: Proper disposal of construction and operational waste.
- **Water Conservation Measures**: Efficient use of water resources and treatment of wastewater.
- **Air Quality Control**: Use of vapor recovery systems and dust suppression measures.

- **Biodiversity Protection**: Minimization of habitat disturbance and contamination risks.

Rejection of Environmental Alternatives

No significant environmental alternatives were considered, as the project has already integrated best practices for environmental protection. The proposed measures are sufficient to address potential environmental impacts.

2.4 Economic Alternatives, Their Selection, and Rejection Criteria

Economic Considerations

The project has been designed to ensure economic viability while minimizing environmental impacts. Key economic considerations include:

- **Cost-Effectiveness**: The selected design and technologies provide the best balance between cost and performance.
- **Local Employment**: The project will create job opportunities during both the construction and operational phases.
- **Long-Term Sustainability**: The project is designed to operate efficiently over its lifespan, ensuring long-term economic benefits.

Rejection of Economic Alternatives

No economic alternatives were considered, as the proposed project is already optimized for cost-effectiveness and economic sustainability.

Table 2.1: Summary of Alternatives Consideration

Category	Details	Rejection Criteria
Site Alternatives	No alternative sites considered.	- Proximity to demand centers - Infrastructure availability - Land ownership - Environmental considerations
Design/Technology Alternatives	No alternative designs/technologies considered.	- Compliance with standards - Environmental benefits - Cost-effectiveness
Environmental	No significant environmental	- Best practices already

Alternatives	alternatives considered.	integrated - Sufficient mitigation measures
Economic Alternatives	No economic alternatives considered.	- Optimized for cost-effectiveness - Long-term sustainability

Conclusion

The proposed **Petroleum Products Storage Unit** has been designed with careful consideration of site selection, design/technology, environmental protection, and economic viability. No alternatives were considered, as the proposed plan already addresses all key factors and complies with regulatory requirements. The next chapters will focus on the **Baseline Environmental Conditions**, **Impact Assessment**, and **Mitigation Measures**.

Chapter 3

Description of the Project

3.1 Objectives of the Project

The primary objectives of the proposed **Petroleum Products Storage Unit** are:

Objective	Details
Safe Storage	Establish a state-of-the-art facility for safe storage of petroleum products.
Environmental Compliance	Adopt environment-friendly technologies and practices.
Economic Viability	Create a cost-effective and sustainable storage solution.
Community Engagement	Minimize socio-economic impacts and engage with local communities.

Primary Details of the Projects

Parameter	Details
Project Name	Proposed Construction of Petroleum Products Storage Unit
Location	Khewat No. 118, Khatooni No. 409 to 417, Muraba No. 30, Killa No. 2, 3, Mouza Manawala Narsingh, Manawala - Safdarabad Road, **3-Km Safdarabad Road, Manawala, Sheikhupura**, near Iqbal Nagar, **Tehsil and District Sheikhupura**.
GPS Coordinates	**31°36'34.0"N, 73°37'59.7"E**
Total Project Area	**2K-2M-163 feet**
Project Cost	Approx. **PKR 150 million**
Nature of Project	Establishment of an environmentally friendly, clean, and green petroleum storage unit.
Scope of Work	Storage of **different petroleum products** in designated tanks.
Storage Capacity	
Furnace Oil (HP)	**47,316 Liters**
Kerosene Oil (NDP)	**44,951 Liters**
Light Diesel	**44,951 Liters**

Oil (NDP)	
MTT (NDP)	**44,951 Liters**
Solvent Oil (Naphtha)	**44,951 Liters**

3.2 Location and Site Layout of the Project

The project site is located at **Khewat No. 118, Khatooni No. 409 to 417, Muraba No. 30, Killa No. 2, 3, At Mouza Manawala Narsingh, Manawala - Safdarabad Road, 3-Km Safdarabad Road, Manawala Sheikhupura, Near Iqbal Nagar, Tehsil and District Sheikhupura**. The GPS coordinates of the site are:

- **Latitude**: 31°36'34.0"N
- **Longitude**: 73°37'59.7"E

The site layout includes the following components:

Component	Details
Storage Tanks	Six tanks for different petroleum products.
Administrative Building	Office and control room for operational management.
Spill Containment Area	Designed to prevent contamination in case of spills.
Parking Area	For vehicles transporting petroleum products.
Utilities	Water supply, electricity, and fire safety systems.

A detailed site layout plan is provided in **Annexure.**

3.3 Land Use on the Site

The project site is currently undeveloped land with no significant vegetation or structures. The proposed land use includes:

Land Use	Details
Storage Area	For petroleum products.
Operational Area	For administrative and control purposes.
Utility Area	For water supply, electricity, and fire safety systems.
Access Roads	For transportation of petroleum products.

3.4 Road Access

The project site is easily accessible via the **Manawala-Safdarabad Road**, which is a well-maintained road connecting the site to major transportation routes. This ensures efficient transportation of petroleum products to and from the facility.

3.5 Vegetation Features of the Site

The site has minimal vegetation, consisting of scattered grasses and shrubs. No significant trees or ecologically sensitive vegetation are present. The construction phase will involve clearing the site, but no significant impact on local flora is expected.

3.6 Cost and Magnitude of Operation

The cost and operational details of the project are as follows:

Parameter	**Details**
Total Project Cost	PKR 150 million.
Storage Capacity	272,071 liters.
Operational Workforce	20-25 employees.
Water Requirement	Construction: 220-250 m^3/day; Operation: 600 m^3/day.
Power Requirement	Supplied by WAPDA.

3.7 Schedule of Implementation

The project will be implemented in the following phases:

Phase	**Duration**
Site Preparation	1-2 months.
Construction of Facilities	4-6 months.
Installation of Utilities	1-2 months.
Commissioning	1 month.
Total Duration	**6-8 months**.

3.8 Description of the Project

Process Flow Chart/Steps

The process flow for the project includes the following steps:

Step	**Details**

Receiving Petroleum Products	Transported to the site via tankers.
Storage	Stored in double-walled tanks.
Quality Control	Regular monitoring of product quality.
Distribution	Dispatched to customers as per demand.

Technology

- **Double-Walled Storage Tanks**: To prevent leakage.
- **Vapor Recovery Systems**: To minimize VOC emissions.
- **Spill Containment Systems**: To prevent contamination.
- **Fire Safety Systems**: To ensure safety.

Raw Materials and Products

- **Raw Materials**: Petroleum products (furnace oil, kerosene oil, light diesel oil, mineral turpentine oil, solvent oil).
- **Products**: Stored petroleum products for distribution.

By-Products

- No significant by-products are generated during storage.

3.9 Restoration and Rehabilitation Plans

The following restoration and rehabilitation plans will be implemented:

Activity	**Details**
Site Restoration	Cleaning and restoring disturbed areas.
Vegetation Rehabilitation	Planting grass and shrubs around the site.
Waste Management	Proper disposal of construction and operational waste.

Process Flow for the Petroleum Products Storage Unit

The process flow for the proposed **Petroleum Products Storage Unit** outlines the key steps involved in receiving, storing, and distributing petroleum products. The process is designed to ensure safe and efficient operations while minimizing environmental impacts. Below is a detailed description of the process flow, supported by a **Process Flow Diagram (PFD)**.

1. Receiving Petroleum Products

- **Step 1.1: Transportation to Site**
  Petroleum products are transported to the site via tankers from refineries or supply points.

- **Step 1.2: Unloading**
  Tankers are unloaded at the designated unloading bay using pumps and pipelines.
- **Step 1.3: Quality Control**
  Samples of the incoming products are tested to ensure they meet quality standards.

2. Storage of Petroleum Products
- **Step 2.1: Transfer to Storage Tanks**
  The products are transferred to double-walled storage tanks using pipelines and pumps.
- **Step 2.2: Tank Monitoring**
  Each storage tank is equipped with level sensors and temperature monitors to ensure safe storage conditions.
- **Step 2.3: Vapor Recovery**
  Vapor recovery systems are used to capture and condense volatile organic compounds (VOCs) emitted during storage.

3. Quality Control and Maintenance
- **Step 3.1: Regular Inspections**
  Storage tanks and pipelines are inspected regularly for leaks, corrosion, or other issues.
- **Step 3.2: Maintenance**
  Preventive maintenance is conducted to ensure the integrity of storage tanks and equipment.

4. Distribution of Petroleum Products
- **Step 4.1: Order Processing**
  Customer orders are received and processed through the administrative office.
- **Step 4.2: Loading**
  Products are loaded into tankers or smaller containers at the designated loading bay.
- **Step 4.3: Dispatch**
  Loaded tankers are dispatched to customers as per the delivery schedule.

5. Spill Prevention and Control
- **Step 5.1: Spill Containment**
  Spill containment systems, such as bund walls and drip trays, are installed to prevent spills from spreading.
- **Step 5.2: Emergency Response**
  An emergency response plan is in place to address accidental spills or leaks.

6. Waste Management
   - **Step 6.1: Solid Waste Collection**
     Construction waste, packaging materials, and domestic waste are collected in designated bins.
   - **Step 6.2: Hazardous Waste Disposal**
     Hazardous waste, such as contaminated soil or used oil, is disposed of through licensed waste management companies.
   - **Step 6.3: Wastewater Treatment**
     Wastewater generated during operations is treated in an on-site treatment plant before discharge.

Detailed Steps with Inputs and Outputs

Step 1: Receiving Petroleum Products
- **Inputs**: Petroleum products from refineries or supply points.
- **Outputs**: Unloaded products ready for storage.

Step 2: Storage of Petroleum Products
- **Inputs**: Unloaded petroleum products.
- **Outputs**: Products stored in double-walled tanks.

Step 3: Quality Control and Maintenance
- **Inputs**: Stored products, inspection tools, maintenance equipment.
- **Outputs**: Safe and well-maintained storage facilities.

Step 4: Distribution of Petroleum Products
- **Inputs**: Customer orders, stored products.
- **Outputs**: Products dispatched to customers.

Step 5: Spill Prevention and Control
- **Inputs**: Spill containment systems, emergency response equipment.
- **Outputs**: Contained spills and minimized environmental impact.

Step 6: Waste Management
- **Inputs**: Solid waste, hazardous waste, wastewater.
- **Outputs**: Properly disposed waste and treated wastewater.

Table 5.1: Process Flow Summary

Step	Inputs	Outputs
Receiving Petroleum Products	Petroleum products from refineries.	Unloaded products ready for storage.

Storage of Petroleum Products	Unloaded products.	Products stored in double-walled tanks.
Quality Control and Maintenance	Stored products, inspection tools.	Safe and well-maintained facilities.
Distribution of Petroleum Products	Customer orders, stored products.	Products dispatched to customers.
Spill Prevention and Control	Spill containment systems.	Contained spills, minimized impact.
Waste Management	Solid waste, hazardous waste, wastewater.	Properly disposed waste, treated water.

Chapter 4

Description of Environment

This chapter provides a clear picture of the existing environmental resources at the project site and its surroundings. The baseline environmental conditions are divided into three main categories: **Physical Environment**, **Ecological Environment**, and **Socioeconomic Environment**. Additionally, the suitability of the site is assessed based on environmental sensitivity and compatibility with the surroundings.

4.1 Baseline Physical Environment

The physical environment of the project site and its surroundings is characterized by the following features:

4.1.1 Climate

- The region experiences a **semi-arid climate** with hot summers and mild winters.
- **Summer Temperatures**: Range between 30°C to 45°C (May to August).
- **Winter Temperatures**: Range between 5°C to 20°C (December to February).
- **Rainfall**: The average annual rainfall is approximately **500-700 mm**, with most precipitation occurring during the monsoon season (July to September).

4.1.2 Air Quality

- The air quality in the region is generally moderate, with occasional increases in particulate matter (PM2.5 and PM10) due to agricultural activities and vehicular emissions.
- No major industrial sources of air pollution are present in the immediate vicinity of the project site.

4.1.3 Water Resources

- **Groundwater**: The primary source of water for the region. The groundwater table is relatively shallow, and water quality is suitable for domestic and industrial use.
- **Surface Water**: No major rivers or streams are present near the project site. However, small irrigation channels and ponds are common in the area.

4.1.4 Soil Characteristics

- The soil in the region is predominantly **alluvial**, with a mix of clay, silt, and sand.
- Soil fertility is moderate, supporting agricultural activities such as wheat, rice, and sugarcane cultivation.
- Soil tests conducted at the site indicate no significant contamination or hazardous substances.

4.1.5 Noise Levels

- The baseline noise levels in the area are within permissible limits, as the site is located away from major highways and industrial zones.

Parameter	Details
Climate	Semi-arid; hot summers, mild winters.
Air Quality	Moderate; occasional increases in particulate matter.
Water Resources	Groundwater (primary source); no major surface water bodies.
Soil Characteristics	Alluvial soil; moderate fertility; no contamination.
Noise Levels	Within permissible limits.

4.2 Baseline Ecological Environment

The ecological environment of the project site and its surroundings is described below:

4.2.1 Flora

- The site has minimal vegetation, consisting of scattered grasses and shrubs.
- The surrounding area is primarily agricultural land, with crops such as wheat, rice, and sugarcane.
- No ecologically sensitive or protected plant species are present in the vicinity.

4.2.2 Fauna

- The region supports common bird species, small mammals, and reptiles.
- No endangered or protected animal species are found in the area.
- The project site is not located near any wildlife sanctuaries or protected areas.

4.2.3 Biodiversity

- The biodiversity of the area is typical of agricultural regions in Upper Punjab, with no significant ecological hotspots or sensitive habitats.

Parameter	Details
Flora	Scattered grasses and shrubs; agricultural crops.
Fauna	Common bird species, small mammals, and reptiles.
Biodiversity	Typical of agricultural regions; no sensitive habitats.

4.3 Baseline Socioeconomic Environment

The socioeconomic environment of the project site and its surroundings is characterized by the following:

4.3.1 Population and Demographics

- The surrounding area is predominantly rural, with small villages and agricultural communities.
- The population density is moderate, with most residents engaged in farming or small-scale businesses.

4.3.2 Employment and Livelihood

- Agriculture is the primary source of livelihood for the local population.
- The project is expected to create job opportunities during both the construction and operational phases, benefiting the local community.

4.3.3 Infrastructure

- The region has basic infrastructure, including roads, electricity, and water supply.
- The project site is accessible via the **Manawala-Safdarabad Road**, ensuring easy transportation of materials and products.

4.3.4 Health and Education

- Basic healthcare facilities and schools are available in nearby villages.
- The project is not expected to have any adverse impacts on local health or education services.

Parameter	Details
Population and Demographics	Rural area with small villages; moderate population density.
Employment and Livelihood	Primarily agriculture; project to create job opportunities.
Infrastructure	Basic infrastructure (roads, electricity, water supply).
Health and Education	Basic healthcare and schools available in nearby villages.

4.4 Lab Reports of Environmental Analyses

Environmental analyses, including soil tests and geo-investigation, were conducted to assess the suitability of the site for the proposed project. The results are summarized below:

4.4.1 Soil Tests

- **Soil Type**: Alluvial soil with a mix of clay, silt, and sand.
- **Soil Fertility**: Moderate, suitable for construction activities.
- **Contamination**: No significant contamination or hazardous substances were detected.

4.4.2 Geo-Investigation

- The site has a stable foundation, suitable for the construction of storage tanks and other facilities.
- No seismic or geological hazards were identified.

4.4.3 Water Quality Tests

- Groundwater quality tests indicate that the water is suitable for industrial and domestic use.
- No contamination from petroleum or other hazardous substances was detected.

Parameter	Details
Soil Tests	Alluvial soil; moderate fertility; no contamination.
Geo-Investigation	Stable foundation; no seismic or geological hazards.
Water Quality Tests	Suitable for industrial and domestic use; no contamination.

4.5 Suitability of the Site

The suitability of the site for the proposed project is assessed based on the following criteria:

4.5.1 Not Prohibited

- The site is not located in a prohibited or restricted area as per local zoning laws or environmental regulations.

4.5.2 Environmentally Sensitive

- The site is not located in an ecologically sensitive area, such as a wildlife sanctuary, protected forest, or wetland.
- No endangered species or critical habitats are present in the vicinity.

4.5.3 Compatibility with Surroundings

- The project is compatible with the surrounding land use, which is primarily agricultural.
- The proposed facility will not disrupt local communities or agricultural activities.

4.5.4 Unsuitability

- No significant environmental, social, or economic factors make the site unsuitable for the proposed project.

Criterion	Details
Not Prohibited	Site is not in a prohibited or restricted area.
Environmentally Sensitive	No ecologically sensitive areas or species.

Compatibility with Surroundings	Compatible with agricultural land use.
Unsuitability	No significant factors make the site unsuitable.

CHAPTER 5

SCREENING OF POTENTIAL ENVIRONMENTAL IMPACTS & THEIR MITIGATION MEASURES

5.1 Environmental Issues

5.1.1 General

The environmental issues had been identified during literature review, consultation with stakeholders, relevant reports and visits to project site. Various types of environmental issues likely to crop up during the life cycle of project are grouped in the following stages:

- Impacts due to location
- Impacts due to design stage/Site development stage
- Construction stage
- Operation stage

5.2 Environmental impacts due to the project location

5.2.1 Project Location:

The subject proposed project is located at Khewat No. 118, Khatooni No. 409 to 417, Muraba No. 30, Killa No. 2, 3, At Mouza Manawala Narsingh, Manawala - Safdarabad Road, 3-Km Safdarabad Road, Manawala Sheikhupura, Near Iqbal Nagar, Tehsil and District Sheikhupura, under the Name of M/s **Cozy Energy Pvt. Limited**.

5.2.2 Impacts

Subject project is present in sheikhupura; Map is annexed with the EIA. Mainly the observed impact is acceptable and have a no toxic effect on life.

5.2.3 Mitigation measures

- Ample Parking area for the cars and motor cycle should be reserved within the subject project premises.
- For security purpose Security guard should be there.
- Location can be considered as positive impact on the community due to the Jobs opportunity provided to the community.
- Gas detection system should be placed for the detection of leakage of hydrocarbons to avoid the density of foul smell.

5.3 Site Selection and Design Stage

5.3.1 Land Use Planning

The present plot was empty. Construction of the project will provide the optimum use of the resource.

5.3.2 Presence of Hazardous Conditions

The site is free of any natural and man-made hazardous conditions to cause any negative impact.

5.3.3 Environmentally Sensitive Areas

The area is agricultural cum commercial. Therefore, environmentally sensitive localities do not exist.

5.3.4 Disturbance to other Site Users

The site is not used by others as it is the property of M/s **Cozy Energy Pvt. Limited.,** so disturbance to other users is out of question. Industry will not be involved to emit offensive odor, noise and other objectionable pollutants/pollution so there will be no environmental pollution issues to the nearby industries.

5.3.5 Availability of Essential Services

Water supply, drainage and sewerage disposal systems are present at proposed site.

5.3.6 Water Supply

Water is needed for cleaning, fire protection and for drinking purpose. Minimum one day's reserve will be kept at the project site. Water will be tested for chemical and bacterial contamination.

5.3.7 Waste Water

Waste water will be treated in septic tanks and then directed to drains.

5.3.8 Communication Infrastructure

The project site is well served by road network.

5.3.9 Availability of Construction Materials

The contractors will provide the construction materials like cement, steel and bricks at the site on as required basis. All the construction materials are locally available.

5.3.10 Skilled and Unskilled Labour

These workers are available at economical rates all the time. The project provides the jobs to the local residents as well as to those from the suburban areas.

Extensive operational & maintenance training will be imparted to staff through well-defined training program before and during system commissioning.

5.3.11 Extraction of Ground Water

The water requirement will be fulfilled by Factories own installed pump.

5.3.12 Traffic Issues

Vehicle access is required especially for transportation. The site is well served with the road network. Heavy traffic will be allowed only during night time during construction phase. The traffic issues at any stage of project life cycle will not arise.

5.4 Environmental Impacts due to the project design

Subject Project under the name of M/s Cozy Energy Pvt. Limited., area for parking, store room, waste water treatment facility, gas detection system, might be have impact if these revealed facilities would have not been incorporated within the subject project. Firefighting plan, health & safety plan, tree plantation plan, emergency response plan must be incorporated during the design phase of the project. The subject project will have;

- Security guard rooms
- Main office
- water storage taken for the firefighting and domestic purposes
- Firefighting instrument room
- Parking Area
- Store room
- Generator Room (in future)
- Electricity room

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

5.4.1 Impacts

- Foul smell can be generated if the gas detection system would have not been installed.
- Soil structure and soil bearing capacity.
- Road infrastructure design.
- Emergency exit in the proposed project.
- Electrical hazard can be due to improper management of electrical system.

5.4.2 Mitigation measures and recommendations

Following are the mitigation measures and recommendation to minimize the anticipated impacts

- Plant design should be designed as per NEPA-58.
- Emergency exits points should be marked within the project building

- Firefighting system should be designed for the emergency situations.
- Electricity system should be design safe and sound.
- Water storage tanks should be established for fighter fighting purposes.
- Electricity wires should be covered by thick plastic/electricity resistant covers.

5.5 Impacts during Constructional Stage

5.5.1 Impacts

The construction stage may involve the following vulnerabilities:

- Generation of dust during loading and unloading of construction materials.
- Generation of noise on account of vehicular use and construction activities. On the basis of surveillances, it is noted that background noise level will be within the PEQS limits. These types of problem may arise on activity:
- Oil storage drum can be leak.
- Local flooding due to over-use of water and leakage of pipes.
- Injuries to worker during construction.
- Traffic problem may be arisen during operational phase.
- Any outbreak of fire due to electrical and other failures.

5.5.2 Mitigation Measures during Construction Stage

For Negative impacts in this stage, following mitigation measures are suggested:

- Minor erosion of land after removal of existing vegetation will be reduced due to the pre-constructed boundary wall of the project and step wise clearing of vegetation cover. Land is almost clear and there would be no chance so of land erosion
- Contamination of land will be avoided by keeping the leaching material on concreted surfaces or leaching proof material.
- Safety of construction workers, people in the surroundings and passersby. Occupational Health & Safety means to provide and maintain a working environment in which employees are not exposed to hazards.
- During Construction activities impacts like dust, noise and flue gases generated from vehicles and machinery will be reduced by effective management system and all parameter will be comply with PEQS by proper tuning of vehicles and machineries and water sprinkling for the dust emission control.
- Construction materials will be stored within the boundary wall of the site.
- Sprinkling of water will be done on site.

- Oils storage drums must be placed over on paved area on the plastics sheets.

5.6 Impacts during Operation Stage

Main environmental issues associated with Project operation are as follow.

- Fire due to short circuits, leakage of tanks and other activities.

5.7 Main Environmental Issues

Main environmental issues associated with project are as follow.

- Waste water due domestic activities.
- Fire due to short circuits, leakage of cylinders and other activities.
- Solid waste generation due to domestic activities.
- Noise pollution from operation machinery and other machinery.
- Health & safety hazards including the electricity hazardous, fire hazards, handling of cylinders, during working and filling of petroleum products.
- Foul smell due to leakage of gas in cylinders.
- Traffic and parking issues may be the serious problems.
- Vehicle access is required especially for transportation. The site is well served with the road network. Heavy traffic will be allowed only during night time during operational phase. The traffic issues at any stage of project life cycle will not arise.
- About 25-30 persons will occupy the project site. The projects' operations will be kept in working condition so that the workers may give their input in environment friendly conditions.
- Management Committee will supervise the smooth functioning of the project site. All the activities will be managed by the qualified and experienced engineers.

5.8 Mitigation Measures during Operation Stage

Following points must be implemented during the operation stage.

- Keep water supply, sewerage disposal and electric supply in working condition.
- Keeps the firefighting arrangements in working condition at all times.
- Contacts of concerned departments like fire brigades, police, first aid, etc. should be displayed at prominent places in the project's building.
- A well design firefighting system will be constructed to cope with fire situations in the plaza.

- A watchman will control the traffic at gate during the construction phase
- Project proponent should submit all the monitoring report in the EPA Punjab Office for the compliance of the PEQS
- All the health & safety measures should be ensured to MSDS
- A Material Safety Data Sheet (MSDS) would be accessible to employee to follow the instructions at the workplace. The MSDS provides important information on propane including physical properties, health effects, first aid, safety precautions, and personal protective equipment (PPE).
- This program would provide instruction to handle all management system.

5.9 Gas and flame Detection

5.9.1 Millennium II Series — Fixed Gas Detection

- Single, multi-channel, or BASIC controller configurations
- Lowest power consumption of any gas detection package available on the market
- Wide voltage range allows for greater stability and system compatibility
- Universal toxic and LEL gas sensors are completely interchangeable with controller/ transmitter
- Robust construction and reliable performance designed for extreme conditions
- Advanced catalytic bead, electrochemical, and infrared sensor technology

5.9.2 UV/IRS Flame Detector

- Wide field of view (120°)
- Robust construction and reliable performance developed for extreme ambient conditions
- Low power consumption, lowers overall costs, increases uptime, allows flexibility, and lower overall costs
- Analog, HART, Modbus, and relay outputs
- Certified for worldwide use

5.9.3 References

- Plant Engineer's Handbook By R Keith Mobley

5.10 Types of Negative Impacts

5.10.1 Minor Impacts

These are of minor intensity. For mitigation of the minor impacts routine and limited actions are required.

5.10.2 Moderate Impacts

These impacts need specific and additional mitigation measures.

5.10.3 Major Impacts

These impacts have severe adverse impact. These are intolerable. All possible preventive and multiple control measures are adopted to minimize their intensity and duration.

5.11 Impacts on Physical Environments

5.11.1 Groundwater Quality and Level

The proposed project would not affect the quality and level of groundwater. Project impact is nil.

5.11.2 Land Utility

It will increase significantly since the project has been planned to be constructed on the existing unused area.

5.12 Impacts on Biological Environments

5.12.1 Flora

The project site is devoid of any significant vegetative cover. Plants are present in the established park. Nil impact is envisaged.

5.12.2 Fauna

The fauna including wildlife species do not exist at the project site. The impact will be nil.

5.13 Impacts on Socio-economic Environments

5.13.1 Security

Because of presence of security guards round the clock the security at the project site will improve as well as in its vicinity. Impact will be moderate positive.

5.13.2 Land Value

Land value in the surrounding area will increase due to completion of the present project. Impact will be moderate positive.

5.14 Resettlement Issues

5.14.1 Dislocation of Population

The project does not involve dislocation of the people. There is no requirement of resettling a single person. Impact is nil.

5.14.2 Loss of Property/Infrastructure

No movable or immovable property and infrastructure of public and private sectors will be lost or damaged during construction and operation stages. Impact will be nil.

5.15 Environmental Enhancement Measures in Addition

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

CHAPTER 6

ENVIRONMENTAL MANAGEMENT & MONITORING PROGRAM

6.1 Purpose and Objectives of the EMP

The primary objectives of the EMP are to:

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

6.2 Management Approach:

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

6.3 Institutional Responsibilities

Following functionaries will be involved in the implementation of EMP:

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

6.4 Training Schedules

Training for the management/contractors/engineers and workers on environmental aspects of the project will be arranged biannually during the construction phase of the project. It will be imparted by a team of experienced trainers.

6.5 Training of Construction contractor

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

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

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

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

6.6 Responsibility of EMP

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

6.7 Environmental Technical Assistance and Training Plan

In order to raise the level of professional and managerial staff, there is a need to upgrade their knowledge in the related areas. HSE/Project Manager should play a key role in this respect and arrange the training programs.

HSE/Project Manager will provide training to staff and workers about the best environmental management practices at the construction site and affective implementation of the EMP.

The training modules will include air, noise and water pollution monitoring, social awareness, Environmental Laws, Punjab Environmental Quality Standards (PEQS), Usage of personal protection equipments, and health and safety related issues on the construction site.

The HSE/Project Manager will train all workers & staff in basic sanitation and health care issues (e.g., how to avoid malaria and transmission of Sexually Transmitted Infections (STI) HIV/AIDS and in general health and safety matters, and on the specific hazards of their work. Training should also consist of basic hazard awareness, site specific hazards, safe work practices, and emergency procedures for fire, evacuation.

HSE/Project Manager will arrange Training on monthly or quarterly basis regarding health & safety, hygiene, firefighting and first aid.

6.8 Proposed Environmental Monitoring Plan:

6.8.1 Ambient Air Quality

Ambient air quality report will be submitted to PEPA biannually by adopting the following recommended methods and frequency.

Priority parameters are given below in the given table:

Sr No.	Parameters	Method	Frequency	Monitoring By
1	**NOx**	40 CFR Part 50, App F (US-EPA)	Biannual	Third party certified lab
2	**SOx**	EQSA-0197-114 (US-EPA)	Biannual	Third party certified lab
3	**CO**	40 CFR Part 50, App. C (US-EPA)	Biannual	Third party certified lab
4	**PM2.5/10 um**	UPEPA- EQPM-0798-122 UPEPA-CFR-40 Appen J	Biannual	Third party certified lab

6.8.2 Noise Level

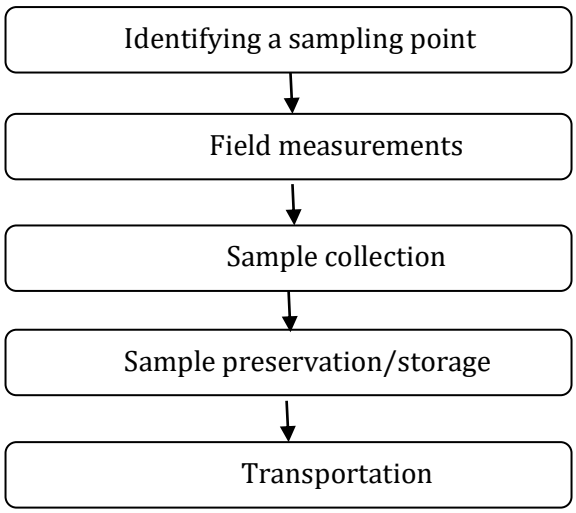
A sound level meter or sound meter is an instrument that measures sound pressure level, commonly used in noise pollution studies for the quantification of different kinds of noise, especially for industrial, environmental and aircraft noise. Noise level should be monitored by EPA certified method using standard noise level meter and reports should be submitted to PEPA on quarterly basis. The current international standard that specifies sound level meter functionality and performance is the IEC 61672-1:2013.

6.8.3 Water sampling

Following methodology will be adopted for water sampling and analysis:

6.8.3.1 Sample Collection:

The water samples will be collected from identified sampling points. The sampling will be carried out in accordance to the SOP based on the recognized methods of United State Environmental Protection Agency (UPEPA), World Health Organization (WHO) and American Public Health Administration (APHA) for water sampling and analysis.



Steps Involved in water sampling

6.8.4 Measurement of Field Parameters:

Parameters that quickly degrade after they will be sampled must be tested in the field. Following parameters will be measured in field that can significantly change during storage and transportation.

- pH
- Odor
- Color
- Temperature

6.8.4.1 Preservation:

Preservation is important in order to minimize the changes in the sample. The collected water samples should be preserved in appropriate containers as per Guidelines.

6.8.5 Sample Identification and Chain of Custody:

The collected samples should be labeled and assigned a unique sample identification number, sampling date and time of collection to collected samples. All the relevant information (sample location, time of collection, sample identification, temperature, pH, collected by, preservation techniques etc.) will be recorded immediately on the Chain of Custody form signed by Pak Green field Analyst.

6.8.5 1 Transportation:

A shipping container (Ice box with eutectic cold packs instead of ice) with maintained temperature of 4° C ± 3 °C must be used for transporting the sample from the collection site to the environmental laboratory.

6.8.6 Methodology for Drinking Water

Methodology for drinking water is given below:

Table 1: Drinking Water Testing Methods

Sr. No.	Parameters	Method / Technique
1	**pH**	APHA-4500-H^+ B
2	**Electrical Conductivity**	Conductivity Method, TDS meter
3	**TDS**	APHA-2540 C
4	**Turbidity**	Nephelometric Method
5	**Taste**	By Sensory
6	**Odor**	By Sensory
7	**Total Hardness**	EDTA Titration
8	**Arsenic**	APHA-3120 B
9	**Chloride (Cl^{-1})**	APHA-4500-Cl B
10	**Sulphate (SO_4^{-2})**	APHA-4500-SO_4 C
11	**Fluoride (F^{1-})**	APHA-4500-F-C
12	**Total Coli-form**	MPN

6.8.7 Waste Water

Waste water quality should be tested on regular basis and the lab reports third party should be submitted to PEPA, at least quarterly basis.

Table – Impacts & Mitigation Measures

Serial	Environmental Issues/ Impacts	Mitigation Measures
PLANNING, SITE SELECTION AND DESIGN STAGE		
1	**Observance of administrative and legal formalities**	It is recommended for obtaining of approval from other relevant departments
2	**Acquisition of land**	The proposed land is the property of the project proponent

3	**Loss of environmentally sensitive areas**	There is no any sensitive area near the project site however the project proponent will achieve the PEQS at the boundary wall of the subject project to avoid the environmental impacts on the nearby community
4	**Changes in traffic pattern**	There is no need to change the traffic pattern due the development of the subject project because only few vehicles will visit the project on daily basis.
5	**Potential conflicts with stakeholders**	There is no any conflict at the current stage of the project. People of the surrounding area have no any objection regarding development of the subject project as per proposed design. It is recommended to Settle the issues through scoping and specific group discussions.
6	**Resettlement issues**	No resettlement issues
7	**Project Design**	Structure Stability Assessment of soil should be done, as per building design i.e. total area of building, No. of stories, etc. Provision of Emergency Exits, Assembly Points, firefighting arrangements, water storage for firefighting should be incorporated in the design. Installation of Dust/flue gases/odor controlling devices should be incorporated in the design. Project proponent is committed to provide all these provision in the design of the project.
SITE DEVELOPMENT STAGE		
1	**Erosion due to stripping and site clearance**	Sprinkling of water on road side or dusty tracks
2	**Generation of noise**	Avoid suing forbidden horns at the site. Do not throw heavy equipment and construction materials in haphazard manner.
3	**Outbreak of fire**	Firefighting equipment must be maintained at the site in good working condition.
4	**Safety**	Safety of the workers and others must be ensured. Privacy of the neighbors must not be disturbed.

5	**Labor issues**	Employ the local labor as far as possible Wages of the labor should be as per Government policy
CONSTRUCTION STAGE		
1	**Minor erosion of land**	• There are two types of erosions: 1. Wind Erosion 2. Water erosion • It is recommended to construct the boundary wall first that will reduce the soil erosion due to wind and chances of water erosion due to water flow from the adjacent will be reduced also. • Clearing of land should be step wise; vegetation should be removed only from the area where main building will be developed. • Add more vegetation, restore the land by more plantation • Sprinkle water on dusty tracks is recommended
2	**Contamination of land and water**	Hazardous substances like oil, fuel, etc. should be kept on concreted surface. Essential services like water supply, sewerage disposal and solid waste management must be in working condition.
3	**Impacts of dust, noise and flue gases on neighbors**	Sprinkle water on dusty tracks is recommended Avoid suing forbidden horns at the site. Do not throw heavy equipment and construction materials in haphazard manner. Proper tunings of vehicles and machinery must be ensured. Schedule construction timings should be implemented for minimum disturbance to neighbors. Continuous Environmental monitoring must be ensured as per proposed monitoring plan.
OPERATION STAGE		
1	**Contamination of land and water**	Continuous vigilance on maintenance of services Tarpaulin sheets must be placed to avoid leaching of oil into

	sources	ground Proper checking and maintenance of tanks must be ensured to avoid any leakage Careful handling, storage and transferring of oil must be ensured.
2	**Fire breakouts**	Training of workers regarding flammable substances will be ensured. SOPs of fire prevention will be adopted like forbidden of smoking, regular testing of electricity infrastructures and regular testing of gas supply system to the industry. Firefighting equipment must be kept in working condition at site
3	**Safety/security concerns**	Safety of the workers and others will be ensured. • Privacy of the neighbors will not be disturbed.
4	**Malfunction of utilities**	It is proposed to appoint maintenance engineer with technicians like plumber and electrician for smooth operation of utility services.
5	**Occupational Health, Safety and Environment**	• Regular medical check-ups must be ensured to improve the working condition and efficiency of workers. • Relevant safety devices like belts, gloves and testers must be strictly used by the operators at the work site. • Safety of management, workers and visitors must be ensured. • Observance construction and safety codes must be ensured. • Provision of emergency exits must be ensured.

Sr. No.	Environmental Parameter/ Element	Mitigation measure to be taken during:		Recommendation	Responsibility
		Construction	Regular operations		
	PHYSICAL ENVIRONMENT				
1	Health & safety	Workers/people will be informed in advance when work is about to start at the project site. This may result in people keeping young children away from work areas. Machinery will never be left unattended. Safe driving practices will be adopted, particularly while passing through human settlements. Basic health facilities will be provided to workers.	Training of workers will be conducted regarding health and safety, firefighting and health hygiene. Use of PPEs will be implemented at workplace. First aid measures will be provided to workers. Shift Rotation, proper ventilation will be provided to workers in case of thermal stress. Safety signs, safety boards, exit arrows etc. will be placed on site. An Assembling point will be kept to gather in case of emergency situation such as fire hazards. Fire Fighting Equipments & system will be enhanced Floor will be kept clean without slippery to avoid any hazard.	According to petroleum products container storage and handling fact sheet following measures are recommended. Keep the cylinder valves closed when not in use and fit and tighten the plug to the cylinder valve internal thread. Ensure that the cylinder is stored upright (vertical) at all times and is not at risk of tipping over. Inspect the cylinder on a regular basis to ensure it is in good condition, free from rust and housed properly. Ensure the cylinder is stored in an area that is adequately ventilated and not susceptible to excessive temperature rise. Store the cylinder in a secure location to protect against falling, damage, being hit by ride on mowers, vandalism, etc. Provide PEPA rate storage for petroleum products away from the oxidizing gases (e.g. oxygen) by at least 3 meters. Use the cylinders	Project Manager / Operations Manager /HSE Manager

			Electric wires, D. Bs will be kept covered & closed. Machinery will never be left in running condition. Safe drinking water will be provided to workers and staff (admitted by the proponent) Keep away from heat and flame. Accidental release in case of spill or leak In case of fire, use water spray, dry chemical, foam or CO2. Water may cause frothing. Cylinder and equipments should be marked and tagged properly Keep the cylinder valves closed when not in use and fit and tighten the plug to the cylinder valve internal thread. Inspect the cylinder on a regular basis to ensure it is in good condition, free from rust and housed	only in well-ventilated areas. The petroleum products container date stamp is less than 10 years old. petroleum products container must be re-tested every 10 years, and should not be used if the cylinder is "out-of-date". The petroleum products container should be in good condition, and must be free from damage and rust. The petroleum products container should be clean and in good condition. The hoses and appliance fittings should be in good condition. Give special attention to the rubber O-rings and rubber parts used on petroleum products container, and replace these as required. **While using the cylinder:** All petroleum products containers should be kept outdoors, upright, away from sources of heat, whether in use, or spare. that the cylinder should not be warmed by a heater or other	

			properly. Store the cylinder in a secure location to protect against falling, damage, being hit by ride on mowers, vandalism, etc. The petroleum products container should be in good condition, and must be free from damage and rust. The petroleum products container should be clean and in good condition. Tank and equipments should be marked and tagged properly Proper housekeeping should be ensured Proper housekeeping will be ensured In order to avoid any fire hazard, use of drugs and narcotics Should be prohibited during working hours at workplace. A proper smoking zone/area	appliance the petroleum products container valve should be closed when the cylinder or appliance is not in use **When finished, it is essential that:** The cylinder valve should be closed. The cylinder should be stored safely, full or empty, away from sources of heat. Dirt, spiders and insects do not get inside the valve outlet during storage. (Plastic plugs should be available to keep the valve outlet clean.) The appliance should be stored safely to avoid damage.	

			should be designated for the smoking and is allowed only in free hours. Handling and storage will be done as per handling and storage guidelines.		
2	Emissions of VOC's	Nill	As the vaporized liquid act as a simple asphyxiates death may result from errors in judgment, confusion, or loss of consciousness which prevents self- rescue. At low oxygen concentrations, unconsciousness and death may occur in seconds without warning. The liquid can cause severe burn-like injuries in case of eye contact In case of skin contact liquid phase can cause severe burn like injuries, can result in frostbite. Prompt medical attention is mandatory in all cases of overexposure to vaporized	Follow best work practices. Use PPEs during handling and storage of petroleum products Ensure proper housekeeping to avoid any exposure in case of rupture. Regular maintenance and inspecting the cylinders and tanks for any leaks, joint failure, etc.	HSE/ Environmental Manager

			petroleum products. Rescue personnel should be equipped with self-contained breathing apparatus. In the case of frostbite from contact with the liquid phase, place the frost-bitten part in warm water, about 40 -42°C. If warm water is not available. Or is impractical to use, wrap the affected part gently in blankets. Encourage the patient to exercise the affected part whilst it is being warmed. Do not remove clothing whilst frosted. Conscious persons should be assisted to an uncontaminated area and inhale fresh air. Quick removal from the contaminated area is most important. Unconscious persons should be removed to an uncontaminated area, and given mouth-to mouth resuscitation and		

			supplemental oxygen. In case of eye contact Immediately flush with large quantities of tepid water, or with sterile saline solution. Seek medical attention.		
3	Gaseous emissions and particulate matter/dust emissions	Construction materials i.e. sand, clay shall be transported to the project site as per HSE Rules. Dust may generate during unloading of raw materials. Sprinkling will be done on dust tracks to control the particulate matter. All equipment, generators, and vehicles used during the project will be properly tuned and maintained in good working condition in order to minimize exhaust emissions. All project vehicles will be checked regularly to ensure that engines are	Unit will not cause much gaseous emissions during functioning. During the operational phase dust will only be generated due to the transportation. Particulate matter/dust will be generated during loading/unloading and transportation of cylinders. PPEs such as masks will be provided. All the places within the unit should be paved to avoid any dust emissions during loading/unloading and transportation of cylinders. Machinery & vehicles should be maintained properly	To control any discrepancies, arise during handling of cylinders keep away the cylinders from heat, hot surfaces, sparks, open flames and other ignition sources. Use only non-sparking tools. Use only explosion-proof equipment Do not enter any area where petroleum products have been spilled unless tests have shown that it is safe to do so. The danger of widespread formation of explosive petroleum products/Air mixtures should be taken into account. Accidental ignition could result in massive explosion.	HSE/ Environmental Manager

		in sound working condition and are not emitting smoke. Ambient air quality has been monitored for baseline study and results have been incorporated within the report in *chapter Description of the Environment*.	According to section 6 & 7 of Material safety data sheet M/S **Cozy Energy Pvt. Limited.,** will use good quality valves that will prevent the chances of leakage during the storage and handling. Monitoring should be conducted as per EPA NEQS Rules 2001		
4	Firefighting	Nil	Fire hazards during the handling, storage of the petroleum products. Fire extinguishers like CO2 water type Dry Chemical Powder type, Foaming type/AFFF will be made available at the site. Fire hydrants of the types reel type & canvas pipe type will be made available at site. Fire pumps of adequate capacity, fire tanks will be made available at site.	Firefighting plan should be formulated. M/s **Cozy Energy Pvt. Limited.,** *has* incorporated the firefighting detail in lay out plan.	HSE/ Environmental Manager

			Fire action plan Fire action plan will be formulated including arrangements for giving warnings, emergency telephones numbers are available at site. The manual for fire detection system will be maintained at site. The management will train all the employees/workers to reach the assembling point at the time of alarm within 15-20 minutes in case of any hazard.		
5	Storage and Handling	Nil	Handling should be in accordance with good industrial hygiene and safety practices. These practices include avoiding unnecessary exposure and removal of the material from eyes, skin and clothing. Wash thoroughly after handling. Always use	Storage and handling should be as per MSDS and Govt. regulations	HSE/ Environmental Manager

			appropriate Personal Protective Equipments (PPEs). Store in cool, dry area away from sun and heat. Keep containers tightly closed. Exposure to small amounts of moisture, even moisture in air, causes polymerization and renders the product unusable. Keep away from heat, sparks, flame and other ignition sources. Disposal should be in accordance with federal, state, and local regulations		
6	Water supply	It shall be ensured that no activity tempers with the water supply system.	It shall be ensured that no activity tempers with the water supply system. Project proponent committed to provide safe drinking water to all workers and staff	Use the water as per need only. Do not waste by any means.	HSE/ Environmental Manager
7	Noise	In order to avoid noise in the project area, vehicles will be properly	No activity producing extra ordinary levels of noise will be allowed as a policy	If noise level exceeds the prescribed limits, then M/s **Cozy Energy Pvt. Limited.,** unit will adopt proper	HSE/ Environmental Manager

		tuned and training of operators/drivers will be conducted Ear plugs will be provided & implemented in case of heavy noise. Noise level monitoring has been conducted for the baseline study and results have been incorporated within the report in *chapter Description of the Environment.*	matter. Ear plugs, ear muffs will be provided & implemented in case of any noisy work environment. Noise Monitoring will be conducted as per EPA-PEQS RULES 2000	mitigation measures by regular maintenance of the vehicles. .	
8	Odor	Nil	Regular maintenance of cylinder and valve is recommended	Regular maintenance of cylinder and valve is recommended	HSE/ Environmental Manager
9	Traffic related problems	The vehicles number will be regulated in a way that no stampedes occur on the site. None of the vehicles will be parked on the road or foot paths in front of the building.	Proper parking area will be reserved for staff and visitors' vehicles No vehicle or motor cycle will be allowed to be parked in the front of the road. There would be no traffic issues due to this project A traffic controller will be designated to control the	Visiting vehicles	HSE/ Environmental Manager

			flow of traffic and avoid congestion Heavy traffic visit schedule will be followed, minimum use of horns at the site and provision of ample parking within the premises of site.		
10	Trash burning	No trash burning will be allowed in or oust side the site.	No trash burning will be allowed in or outside the site.	Solid waste or discarded material should be handed over to contractor	Project Manager / HSE Manager
	BIOLOGICAL ENVIRONMENT				
11	Fauna and Flora	Proposed site is devoid - off any protected species of both fauna & flora	Awareness programs will be planned regarding the protection of fauna & flora. Species of Indigenous plants will be planted at site. Animal/reptiles/birds Hunting will be prohibited	Proper tree plantation plan should be developed	Project Manager / HSE Manager
	SOCIOECONOMIC IMPACTS				
12	Resettlement issues	There is no any issue of resettlement due to the construction of the subject project.	There will not be any issue of resettlement due to the operation of the subject project.	Neighbor's privacy should be on priority.	Project Manager / HSE Manager
13	Change in culture & language	Maximum employment of Local people is recommended to preserve the local cultural language.	Maximum employment of Local people is recommended to preserve the local cultural language.	Local people should be preferred	Project Manager / HSE Manager

		It will help in communication with the local people to resolve any emerging issue near the project area	It will help in communication with the local people to resolve any emerging issue near the project area		
14	Education	School and colleges exist in the area. The project proponent will initiate an educational awareness program.	School and colleges exist in the area. The project proponent is committed to initiate an educational awareness program and will provide educational facilities for the children of the workers.	Educational assistance should be provided	Project Manager / HSE Manager
15	Health	Heath facility already exists within the area The project proponent should provide first aid facilities at site and also social security and medical checkups of the workers.	Heath facility already exists within the area The project proponent is committed to provide first aid facilities at site and also social security and medical checkups of the workers.	First aid and medical facilities should be provided within the unit	Project Manager / HSE Manager
16	Culture, Norms of the area	Maximum local employment should be ensured to preserve the	Maximum local employment should be ensured to preserve the		Project Manager / HSE Manager

		culture of the area	culture of the area		
17	Gender inequality	Women involvement in decision making process should be ensured. Equal employment opportunity in suitable department of the proposed project should be ensured	Women involvement in decision making process should be ensured Equal employment opportunity in suitable department of the proposed project should be ensured	Public participation should be ensured	Project Manager / HSE Manager

6.9 Equipment Maintenance Detail

The subject project is the proposed establishment of petroleum products Storage and Filling Plant. The company will maintain the records for Health Safety & Environment and will hire HSE manager to check and deal with the HSE issues. The company shall maintain PPEs, medical facilities, firefighting Equipments as fire buckets, fire hydrants and fire extinguishers and records for their periodic fillings or replacement.

6.10 Environmental Budget

The cost required to effectively implement the mitigation measures is important for the sustainability of the Project both in the construction and operation stages of the Project.

Company allocated the Environmental Budget for the Training, maintenance and management of Environment is 2% of total cost annually that will include filling and maintenance of equipments, restoration, plantation, and availability of PPEs, strategic planning to cope with any emergency situation and formulate the disaster management plan to cope with natural disaster. Any equipment or devices failure or replacement will not be included in this budget.

CHAPTER 7

STAKEHOLDERS PARTICIPATION

Public discussions were held with the inhabitant of the surrounding area. They are quite positive to the project and see the project as growing business. The people observe strong positive impacts regarding employment, business and structural development due to this project. EIA findings depict that people perceive overall positive social and economic impacts by the project. Their attitude towards the project installation is highly optimistic. Majority of the people are convinced for development in the area and they correlate this progress with the pace of their social mobility but they were also concerned with scenic beauty of the area and employment which the proponent has ensured to maintain the aesthetics of the area, reclaim the land and also to provide jobs/employment during installation and at the time of functioning of the project. Moreover, project proponent admitted to adopt all the mitigation measures to control any impacts resulting from the subject project.

7.1 Methodology of consultation:

The EIA team carried out public consultations at various locations around the Project Site and conducting group meetings with different group of stakeholders. The stakeholder's consultation during this phase of the work targeted the project area, administrative and private offices, Govt. offices, shops, etc. near the Project area:

- Selection of the stakeholders for consultation, reconnaissance of the project site and initial discussions with the local community, residents, education institutes, health institutes, hospital and NGOs, shopkeepers, drivers etc.
- Environmental consultants and social specialists and documenting the opinions of the stakeholders expressed during the meetings etc.

7.2 Stakeholder identification:

Stakeholders must be considered at all levels according to the importance of the project. They may be at provincial, district and village level. The process of consultation is an ongoing process which continues during the project life cycle and even after the submission of this environmental assessment report and so on. Therefore, three-tier approach was adopted. Stakeholders were identified, categorized and consulted at provincial (EPA Punjab, Irrigation department, Agriculture department, Wildlife department, mines and mineral department, metrological department etc.), district level (EPA, Irrigation department, Agriculture department, Wildlife department etc.) & village level (Direct & indirect concern persons)

Consultations with government, provincial and district level departments were carried out through meetings and visits while consultations with locals, villagers, neighbors and directly

7.3 Proponent's Environmental Management Team

Possible impacts and mitigation measures related to the storage and refilling of the petroleum products 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 environmentally friendly.

7.4 Responsible Authority

Management of M/s **Cozy Energy Pvt. Limited.,** *is* the responsible authority to take all measures prior to the petroleum products process activity.

7.5 Other departments and agencies

For the impact analysis detailed meetings were held with the management of M/s **Cozy Energy Pvt. Limited.,** community, education institutes, health institutes, hospital and NGOs. Issues were discussed that may affect the environment and also the implementation of proposed project. All possible mitigation measures were considered and incorporated in the Environmental Management Plan.

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

7.6 Environmental Practitioners and Experts

Team of M/s Pak Green Enviro-Engineering (Pvt.) Ltd. visited the project site, had discussions with stakeholders and consulted with the local people of nearby and other villages to evaluate the project socio-economic impacts. People of the area belong to different professions like mostly belong to employment, own businesses, doctors, in Army, teaching, in agriculture, etc. Women were also consulted for their point of view regarding the betterment of the area by this project, some of them communicated but according to social value of the area they mostly hesitate to communicate comfortably and get pictured. People provide the massive information about the project and have positive remarks regarding the project development.

7.7 Affected & Wider Community

There is no affected community present in the radius of our study area. PGEE team has consulted with the inhabitants of the different area. They provided positive remarks regarding the subject project and in the favor of the subject petroleum

products process activity for the proposed plant. Stakeholders' participation Performa's and socioeconomic questionnaire were get filled by the inhabitants to evaluate the project socio-economic impacts. Stakeholders' participation Performa & socioeconomic questionnaire annexed.

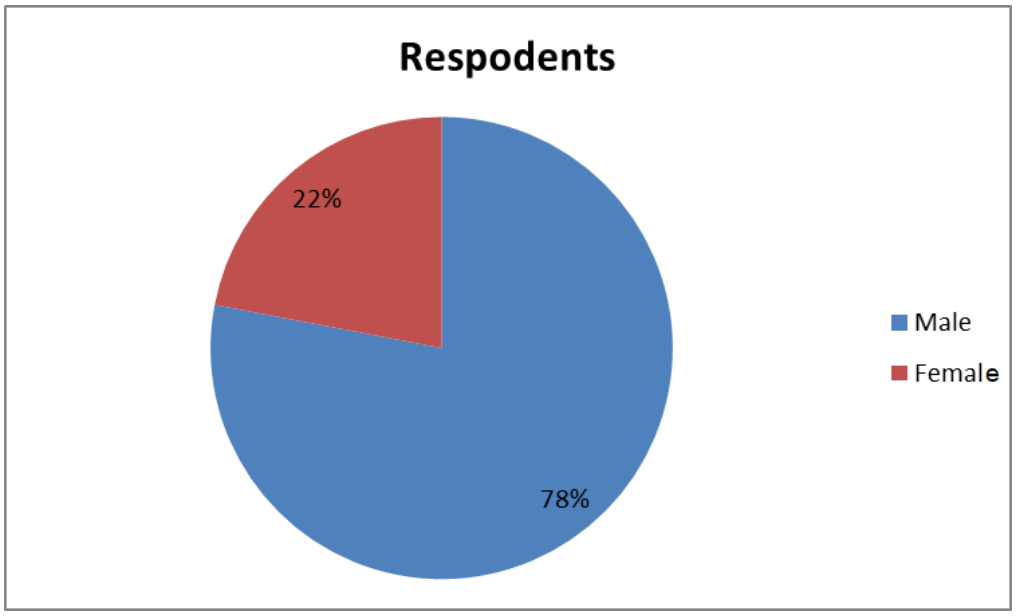
7.7.1 Sample size

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

7.7.2 Statistical Analysis

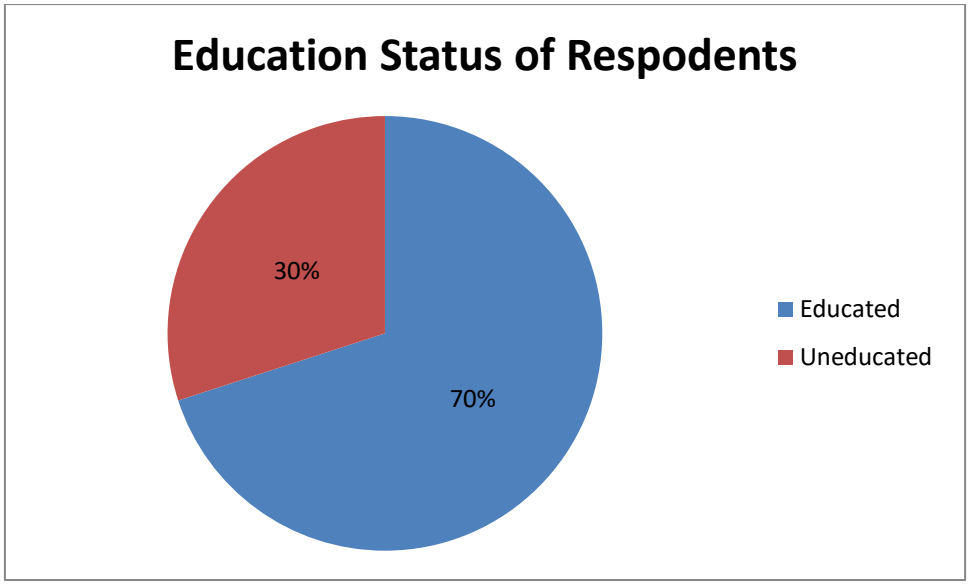
SPSS 19.0 has been used for the statistical analysis of the data collected during the visit of study site villages through questionnaires.

Results & Discussion



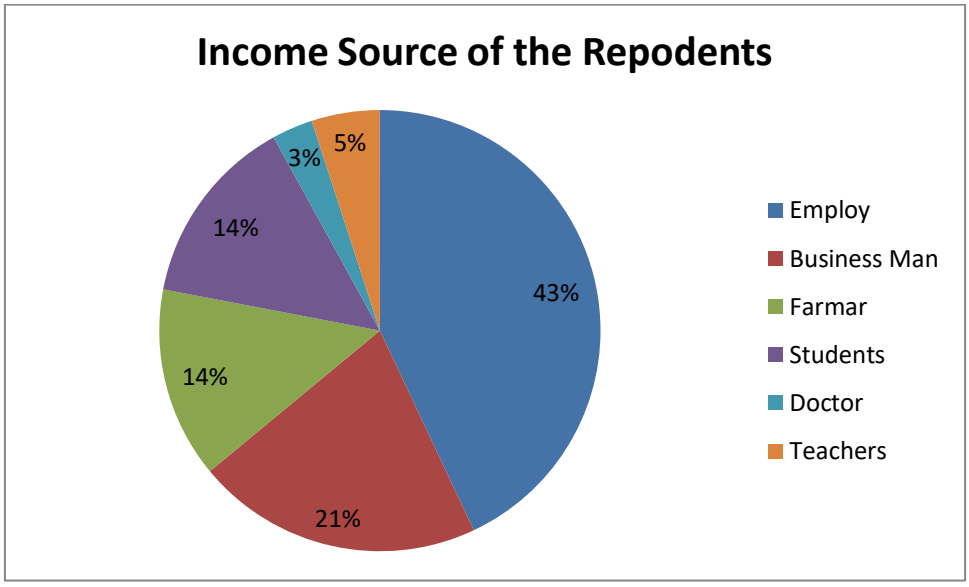
Discussion:

According to graphical representation, 78% respondents were male while 22 % respondents were female. The number of female respondents is less as compared to male respondents because according to the social binding female hesitates to respond or communicate comfortably.



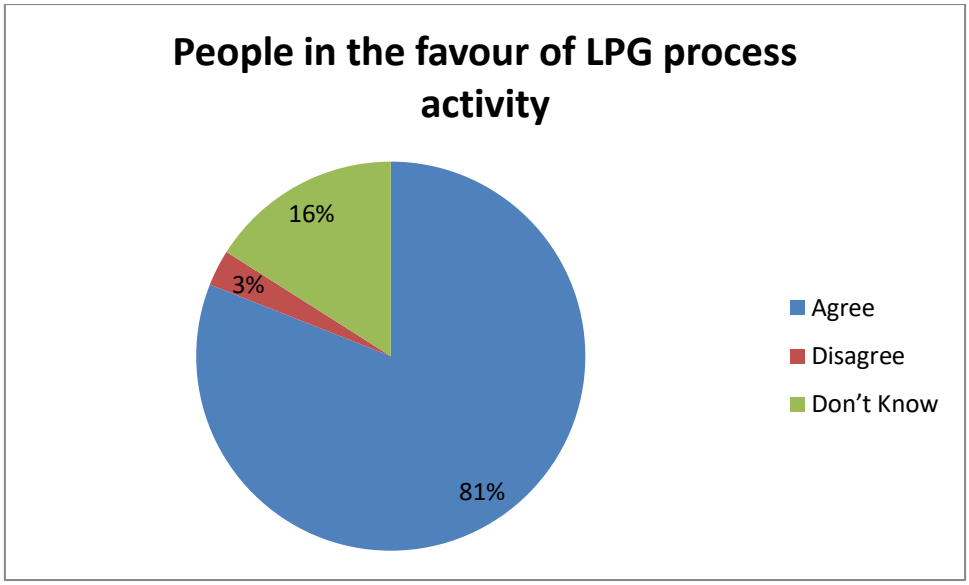
Discussion:

According to above graphical representation, 70 % respondents were educated while 30 % were uneducated. So, according to the survey overall education status of the area is good.



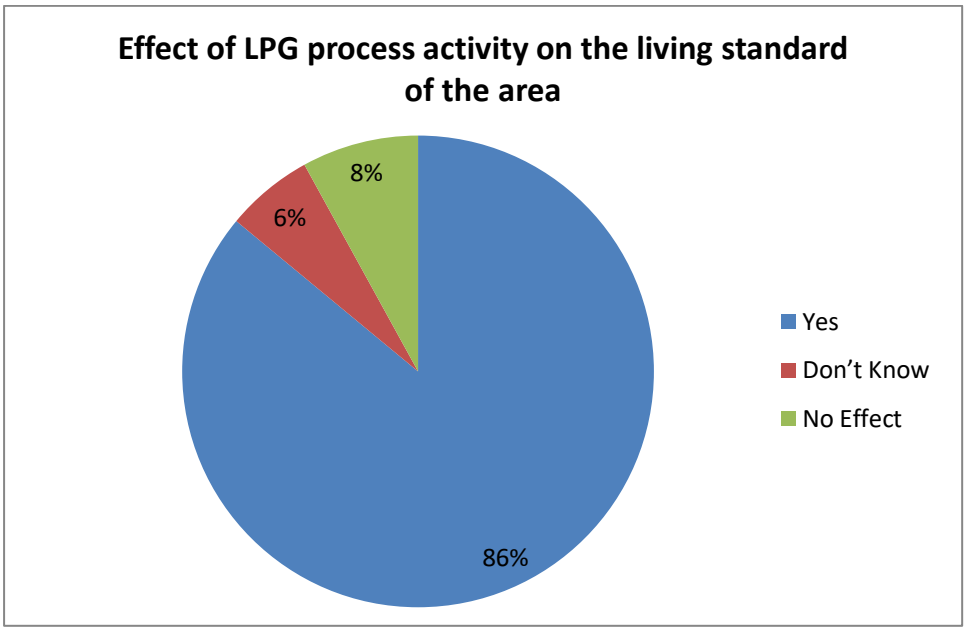
Discussion:

According to above graphical representation, source of income of majority of the respondents in the area was mainly employee in the private and government sectors while all other respondents' source of income was business man, farmers, students, doctors and teachers.



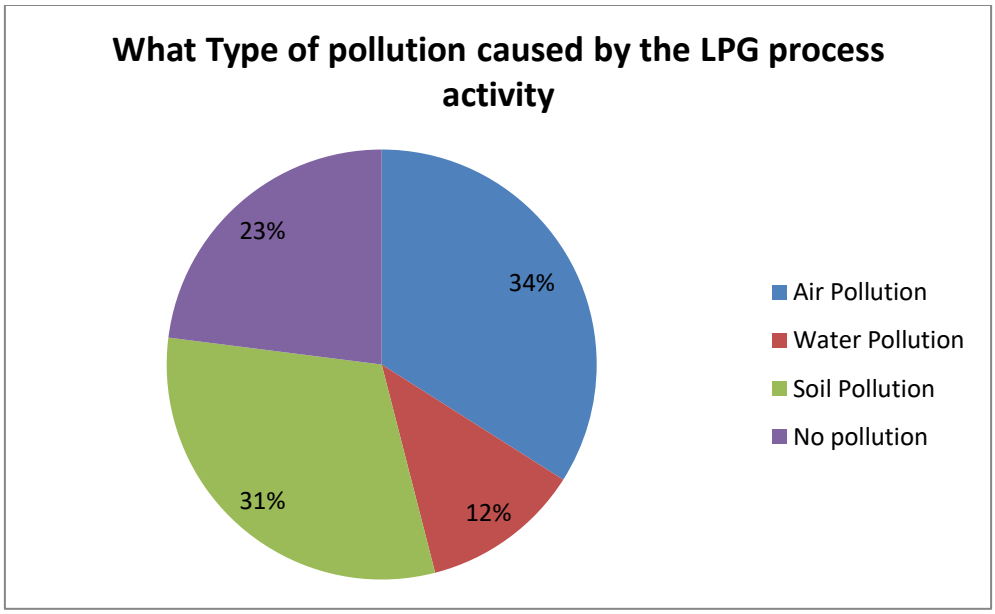
Discussion:

As per survey, 81% people were in the favor of the process activity and they gave positive remarks regarding the subject project while 16% respondents were having no opinion regarding the project and only 3% respondents were not in the favor of the subject project due to their concern regarding the aesthetic degradation of the and no preference to local people for jobs.



Discussion:

As per survey, 86% respondents said that process activity will enhance the living standard and income level of the area, 8% said that there will be no effect on the living standard and income level while only 6% respondents had no remarks regarding the subject project.



Discussion:

As per survey of the area and graph indicates, some people gave remarks that there will be higher air pollution (i.e. 34%) by the subject petroleum products process activity, some people said that there will be soil pollution (i.e. 31%) by the subject activity, some people said that there will be no pollution caused by the subject project while some people said that there will be water pollution (i.e. 23%) caused by the subject activity.

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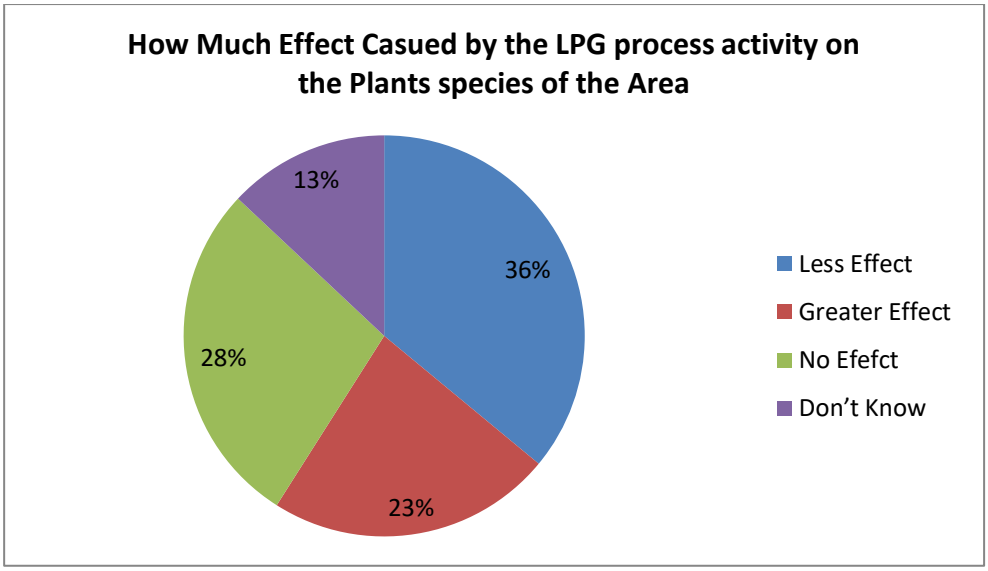

Discussion:

As above graph indicates, 36% of the respondents remarked that there will be less effect caused on the plant's species by the petroleum products process activity, 28% said that there will be no effect caused on the plant's species by the subject activity and 23% said that greater impact will be caused by the subject project on the plants species while 13% respondents had no remarks regarding the subject project effect on the plant's species.

Chapter 8

Conclusion and Recommendations

8.1 Conclusion

The proposed **Petroleum Products Storage Unit** by **Cozy Energy Private Limited** has been thoroughly assessed through this Environmental Impact Assessment (EIA) report. The project aims to establish a state-of-the-art, environment-friendly facility for the safe storage of petroleum products, including furnace oil, kerosene oil, light diesel oil, mineral turpentine oil, and solvent oil (naphtha). The project site, located at **Mouza Manawala Narsingh, Sheikhupura**, has been evaluated for its environmental, social, and economic impacts.

Key findings of the EIA include:

1. **Environmental Impacts**: The project is expected to have minimal environmental impacts due to the adoption of advanced technologies such as double-walled storage tanks, vapor recovery systems, and spill containment measures. Baseline environmental studies indicate no significant contamination or ecological sensitivity at the site.
2. **Socioeconomic Benefits**: The project will create employment opportunities during both the construction and operational phases, benefiting the local community. It will also contribute to the efficient distribution of petroleum products in the region.
3. **Regulatory Compliance**: The project complies with the **Pakistan Environmental Protection Act (PEPA) 1997** and **EPA Regulations, 2022**, ensuring adherence to environmental standards and guidelines.
4. **Site Suitability**: The site is suitable for the proposed project, as it is not located in an ecologically sensitive area and is compatible with the surrounding land use.

Based on the findings, it is concluded that the project is environmentally feasible and socially beneficial, provided that the recommended mitigation measures are implemented effectively.

8.2 Recommendations

To ensure the successful implementation of the project and minimize potential environmental and social impacts, the following recommendations are made:

8.2.1 Environmental Mitigation Measures

1. **Air Quality Management**:
    - Install vapor recovery systems to minimize VOC emissions.
    - Use dust suppression techniques during the construction phase.
    - Regularly monitor air quality to ensure compliance with EPA standards.
2. **Water Resource Protection**:
    - Implement spill containment systems to prevent groundwater contamination.
    - Treat wastewater generated during operations before discharge.
    - Conduct regular water quality monitoring.
3. **Soil and Land Management**:
    - Prevent soil erosion during construction by using temporary coverings and vegetation.
    - Conduct regular soil tests to detect any contamination.
4. **Waste Management**:
    - Segregate and dispose of solid waste through licensed waste management companies.
    - Properly manage hazardous waste, such as used oil and contaminated materials.
    - Recycle packaging materials and other recyclable waste.
5. **Noise Control**:
    - Use noise barriers and silencers to minimize noise during construction and operation.
    - Schedule noisy activities during daytime hours to reduce disturbance to nearby communities.

8.2.2 Socioeconomic Measures

1. **Community Engagement**:
    - Conduct regular consultations with local communities to address their concerns.
    - Provide information about the project and its benefits to the community.
2. **Employment Opportunities**:
    - Prioritize hiring local labor during the construction and operational phases.
    - Provide training programs to enhance the skills of local workers.
3. **Health and Safety**:
    - Implement health and safety protocols to protect workers and nearby communities.
    - Provide personal protective equipment (PPE) to all workers.

8.2.3 Monitoring and Reporting

1. **Environmental Monitoring**:
    - Establish an environmental monitoring plan to track air quality, water quality, noise levels, and waste management.
    - Submit regular monitoring reports to the EPA and other relevant authorities.
2. **Compliance Audits**:
    - Conduct periodic audits to ensure compliance with environmental regulations and project commitments.
    - Address any non-compliance issues promptly.
3. **Stakeholder Communication**:
    - Maintain open communication with stakeholders, including local communities, regulatory authorities, and environmental experts.
    - Provide updates on project progress and environmental performance.

8.2.4 Emergency Preparedness

1. **Spill Response Plan**:
    - Develop and implement a spill response plan to address accidental spills or leaks.
    - Train staff on spill response procedures and conduct regular drills.
2. **Fire Safety**:
    - Install fire safety systems, including fire extinguishers, hydrants, and alarms.
    - Train staff on fire safety protocols and emergency evacuation procedures.

Table 8.1: Summary of Recommendations

Category	Recommendations
Environmental Mitigation	- Air quality management - Water resource protection - Soil and land management - Waste management - Noise control
Socioeconomic Measures	- Community engagement - Employment opportunities - Health and safety
Monitoring and Reporting	- Environmental monitoring - Compliance audits - Stakeholder communication
Emergency Preparedness	- Spill response plan

	- Fire safety systems

8.3 Final Remarks

The proposed **Petroleum Products Storage Unit** is a well-planned project that balances economic development with environmental protection. By implementing the recommended mitigation measures and monitoring plans, the project can achieve its objectives while minimizing adverse impacts on the environment and local communities. It is recommended that the **Environmental Protection Agency (EPA)** may grant the necessary approvals and **No Objection Certificate (NOC)** for the project to proceed.