

Executive Summary

Title of the project: the project under consideration of this Environmental Impact Assessment report is “Construction of LPG Storage & Filling Plant by Sangla Energy (Pvt.) Ltd.

Location of the Project: Marabah No. 59 Killa No.20,21 Mouza Chak Bhattianwala, Ferozwala District Sheikhpura.

Name of the proponent: the proponent of the project is Mr. Abid Hameed Bhatti.

Name of the organization preparing the report: the proposed site was surveyed, keenly studied and EIA report prepared by EnviroSafe Consults. (Opposite Jamia Masjid Nawab Din, Block G State Life Housing Society Lahore, Pakistan. www.envirosafe.pk, Email: envirosafeconsults@gmail.com, hassan.zahid@envirosafe.pk. Mobile: 0300 420 1688, 0345 8301 688)

Purpose of the report:

The purpose of Report is to conduct Environmental Impact Assessment (EIA) for Construction of LPG Storage and Filling Plant. The EIA is conducted under the Legal framework of Punjab Environmental Protection Act, 1997 amended in 2017 and Review of EIA/EIA Regulations, 2022 to seek the Environmental Approval. In compliance with the applicable Environmental Regulations the proponent decided to get the NOC of the project, through consultant. In order to fulfill the legal requirement of Punjab Environmental Protection Act 1997 amended in 2017, Section 12; for obtaining No Objection Certificate from Environmental Protection Agency (EPA), Government of Punjab, Lahore, this Environmental Impact Assessment (EIA) Report is being submitted to the said agency. The EIA Report, as desired by EPA, has been prepared according to the prescribed “Guidelines for the preparation of Environmental Reports, 1997” and “Review of EIA/EIA Regulations, 2022.”

A brief outline of the proposal:

Nature of the project: LPG Storage and Filling Plant

Nature of Area: Agricultural

Current Status: The project is in initial stage no construction has been done yet.

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Category of the Project: The project falls under Schedule I (I) Any other project for which filling of an EIA is required by the Provincial Agency under sub regulations (2) of Regulation 5

Area of the Project: 87120 S/F

Total covered Area: 5976 S/F

Objectives of the Project:

The main objectives of the project

- To fulfill the market demand of LPG
- Provide low-cost Fuel.
- To provide better job opportunities to the local community including skilled and un- skilled workers during construction phase

Cost and magnitude of the project:

The total cost of the project is 52 million.

Cost Break up

Land cost	10 Million Rupees
Construction & Machinery	40 Million Rupees
Environmental Budget	0.5 Million Rupees
Health and Safety Budget	0.5 Million Rupees
Others	1 Million Rupees
Total	52 Million Rupees

The man power during construction phase will be 35-40 persons, while 10-12 persons will perform their duties during operational phase of the proposed project.

General layout features of the plant

Storage Capacity of the Plant: (2×50 MT)

Filling capacity: 30-40 MT/Day

Specifications

- The LPG storage & Filling plant design as per NFPA-58 and under Mineral & Industrial Gases Safety Rules 2010
- LPG Piping design ASME 31.3
- LPG tanks design as per ASME Sec VIII-Div-1
- Piping fabricated and welded by a qualified welder and tested in accordance with ASME Sec IX
- Electrical wiring according with the Electrical wiring regulation.
- Safety relief valves to protect LPG System to protect LPG system against over pressure at any time.
- All LPG lines are Sch-40, S. A 106 Gr. B.
- All LPG flanges are class 300 ANSI B16.9
- LPG piping test pressure is 525 Psi.
- 10% radiography test for LPG lines
- Fire water storage tank
- Fire water pump
- Fire water lines are design as per ASME B31.3
- Fire-fighting equipment are as per NFPA 15,20
- Fire line design pressure is 150 Psi.
- Fire lines test pressure is 225 Psi.
- Fire water lines fitting are class 150.

Water consumption during construction phase: 50 to 55 gallons

Water consumption during operational phase: 20 to 25 liters per day

5-6 Liters per day (only required for drinking)

The major impacts and their mitigation measures:

During construction, vehicles and machinery will be employed. These will generate some dust and smoke temporarily which will stop on completion of the construction work. This impact is classified to be short term, reversible and limited, as it will only occur during the construction activities. Water will be sprinkled daily when there is an obvious dust problem on all exposed surfaces to suppress dust emission.

Safety of workers will be taken into consideration to avoid any injury and accidents. Activity will be carried out during the day time to lessen the impact of noise on surrounding environment.

Vehicular movement will be restricted to a specific time for supplies of construction material. Site workers and drivers will wear dust masks especially during dry and windy weather conditions to avoid health risk. During construction phase the soil quality may be affected due to very small amount of discharges during vehicle and equipment maintenance and leakage from equipment and vehicles. To avoid leakage the vehicles and machinery will be properly maintained, avoid the maintenance of vehicles at project site.

Waste produce from construction include, packing material, scrap metal, wood. Recyclable material will be separated at source. Waste bins will be placed at the construction site for waste materials. The recyclable waste will be sold to waste contractors. The majority of the construction waste will be inert material and it is proposed to reuse it for construction purposes where possible. Excavation material will either be used for infill during construction or be removed from the site by appropriately permitted waste collectors. The solid waste management plan for construction phase attached in “annexure H”.

The Contractor will ensure that the construction workers/labours are trained in safety procedures for all relevant aspects of construction. The training plan is attached in “annexure G”. Construction workers will be provided with proper safety equipment such as helmets, goggles, masks, where required and considered necessary. First aid kits and other necessary equipment will be kept available at site along with the list of emergency phone numbers to be contacted in case of any emergency/incident; Proper illumination will be provided at night. Night time construction activities will be avoided.

Sides of the excavation area will be covered with corrugated protection sheets to avoid any sliding of soil; Warning signs will be displayed in local language where considered necessary. Fence will be used all around the site.

During operational phase Personal protective equipment will be provided to the workers to avoid any serious accidents. Safety signs will be posted at all required places of the storage area.

Workers will be trained on use of firefighting system to deal with the situation as well as first aid trainings. The training plan is attached in “annexure G” evacuation drills will be carried out periodically.

Firefighting and Personal Protective Equipment

- Smoke Detectors
- 3 dry chemical powder fire extinguishers
- 03 CO₂ Fire Extinguishers
- 2 AFFF Fire Extinguisher (Aqueous Film forming foam)
- 02 DCP Trolley Mounted
- 02 AFFF Trolleys
- 02 CO₂ Trolleys
- Sand buckets
- 03 First Aid Boxes
- Emergency Torches
- Battery operated Fire Exits
- Safety signage's
- Central Alarm System
- Wireless communication
- Face mask
- Safety Goggles

- Safety Gloves
- Fire proof Suit
- Fire Blanket
- Safety shoes
- 02 Emergency Shut Down valve
- 02 Fire Hydrant
- 01 fire Water Pump
- Showering Pump
- 01 Jockey Pump
- Manual Sprinkler
- Auto Sprinkler

Sewage from washrooms will pass through Septic Tanks before discharge into the main nearby drain. There will be periodic maintenance plan for storage tanks. Proper parking arrangement will be provided. The proponent will plant indigenous species of plants to improve the climatological conditions and aesthetic value of the area. The tree plantation plan is attached in “annexure J”

Very small quantity of Solid waste will generate which will handover to waste contractor. The construction of the project will create skilled and unskilled labor opportunities during its construction and operational stages. Most of the unskilled labor will be employed from the local communities, which will reduce the unemployment in that area and improve living standards of the local population.

Proposed Monitoring: The EMP is prepared to ensure that the activities are undertaken in a responsible non-detrimental manner with the objectives of:(i) providing a pro-active, feasible and practical working tool to enable the measurement and monitoring of environmental performance onsite; (ii)guiding and controlling the implementation of findings and recommendations of the environmental assessment (iii) detailing specifications deemed necessary to assist in mitigating the environmental impact(iv)ensuring that safety recommendations are complied with detailed Environmental Management Plan (EMP) is presented in Chapter 6.

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1 CHAPTER 1 INTRODUCTION

1.1 Proposed project Introduction

LPG has growing business in Pakistan. It is replacing the demand of petrol, diesel, etc. in the local Market, industries and especially the poor community due to its low buying cost.

Liquefied petroleum Gas (LPG) is a non-renewable source of energy which is being used as domestic fuel source in Pakistan especially for motor vehicles. Punjab shares a major role in vehicular increase due to its bigger area and massive population. Since the vehicular load is increasing rapidly. Demand of LPG is also higher for local supply.

Primarily LPG found as a mixture of inflammable hydrocarbon in the form of gaseous phase which convert into liquid phase under moderate pressure and readily vaporizes if the pressure is released. This behavior of LPG is significant in order to transport and store it in concentrated liquid form. In the present scenario most common types of LPG are propane and butane. Unlike to CNG, the advantage of LPG is that it does not require high pressure for storage and transportation. The combustion of LPG is environment friendly as compare to other fuels such as diesel, petrol.

In the view of the rising oil prices in the international market and its economic cost to the energy deficient Pakistan the Government is encouraging the use of LPG as cleaner and environment friendly fuel substitute of major oil consuming industries such as power generating, chemical & fertilizer and transport sector.

The proponent intends to construct the LPG Storage and Filling Plant.

The facility will be fully equipped with firefighting arrangements. Safety signs will be posted at every required place.

1.2 Purpose of the Report

The proponent needs the No Objection Certificate (NOC) for their proposed project (Construction of LPG Storage and Filling Plant) for which an Environmental Impact Assessment (EIA) Report is required under Section 12 of the Punjab Environmental Protection Act – 1997 amended in 2017 has to be submitted to the Environment Protection Agency (EPA) before the commencement of the construction of the project.

The purpose of this report is to analyze impacts of the project. This report is prepared by critical examine of the environmental factors which might be affected due to the renovation / improvement activity and also after the operation of the LPG Storage and Filling Plant. Keeping in view the potential environmental impacts, this EIA report has been prepared and submitted to Environmental Protection Agency (EPA), Government of the Punjab, Lahore.

This EIA identifies, describes and evaluates the potential environmental impacts that could result from the implementation of the project, and include possible cumulative impacts from all the activities. It also identifies required environmental permits relevant to the project. As appropriate, the affected environment and environmental consequences of the project may be described in terms of regional overview or site-specific descriptions. The Report also identifies measures to prevent or minimize environmental impacts. The report highlights existing environmental, social, physical and other aspects of the area. It also provides necessary measures to be taken to mitigate any environmental impact. The monitoring plan is also described in the report.

The regulations and guidelines considered while preparing this EIA Report include:

- Policy and Procedures for filing, review and approval of the environmental assessments.
- Guidelines for the preparation and review of Environmental Reports.
- Guidelines for public participation.
- Guidelines for sensitive and critical areas.
- Detailed sectoral Guidelines.

The EIA Report describes environmental, socio- economic, physical, and environmental, land use, crops, forestry, water bodies, bio diversity and other relevant aspects associated with this project. It also describes mitigation measures to be adopted.

The EIA Report also provides information as desired under the format used to help decision makers, EPA Punjab in the present case, before issuing the desired NOC.

1.3 Identification of the Project and Proponent

1.3.1 Project

The proposed project under consideration of this Environmental Impact Assessment Report (EIA) is Construction of LPG Storage & Filling Plant by Sangla Energy (Pvt.) Ltd.

1.3.2 Proponent of the Project

Mr. Abid Hameed Bhatti is the proponent of the project.

1.4 Details of consultant

EnviroSafe Consults

Opposite Jamia Masjid Nawab Din, Block G State Life Housing Society Lahore, Pakistan

Mobile# 03458306188, 03004201688

Email: envirosafeconsults@gmail.com, hassan.zahid@envirosafe.pk.

Website: www.envirosafe.pk,

A core team of qualified professionals of EnviroSafe Consults having relevant experience of conducting environmental and social assessments contributes to preparation of this Environmental Impact Assessment (EIA).

The details of team members who participated in the preparation of EIA Report is given below in Table 1.1

Table 1-1 EIA Study Team

Team Members		
Name	Designation	Qualification
Dr. Hassan Zahid	Lead Environmental Professional	PhD Environmental Management
Mr. Abid Ali	Lead Environmental Professional	M. Phil. Environmental Sciences
Mr. Awais Hassan	Lead Environmental Professional	M. Phil. Environmental Sciences
Miss. Ayesha Hameed	Environmental Professional	MS. Environmental Sciences
Mr. Abdullah Zahid	Environmental Professional	M. Phil. Environmental Management LLB
Miss Rabia Arshad	Environmental Professional	M. Phil. Environmental Sciences

1.5 Nature size and Location of the Project

1.5.1 Nature

Keep in view the design, construction and operation phases of the project along with potential impacts generated during the course of the project, the proposed project (Construction of LPG Storage & Filling Plant by Sangla Energy (Pvt.) Ltd.) The project falls under Schedule I (I) Any other project for which filling of an EIA is required by the Provincial Agency under sub regulations (2) of Regulation 5. The EIA of the said project is conducted under the direction of EPA Punjab.

1.5.2 Total Area of the Project:

Area of the Project: 87120 S/F

Total covered Area: 5976 S/F

1.5.3 Location

The site is located at Marabah No. 59 Killa No.20,21 Mouza Chak Bhattianwala, Ferozwala District, Punjab.

1.6 Components of the Report

This EIA Report presents the screening of potential environmental impacts of the proposed project Construction of LPG Storage & Filling Plant by Sangla Energy (Pvt.) Ltd. discusses the necessary mitigation measures to eliminate or reduce the negative impacts to an acceptable level. It also describes the institutional requirements and provides an Environmental Monitoring Plan (EMP). EIA report comprises of the following chapters.

Chapter 1 **“Introduction”** Briefly presents the project introduction, objectives and need of the EIA Study.

Chapter 2 **“Statutory Requirement & Standards”** Comprises the policy, guidelines, statutory obligations and roles of institutions concerning EIA study of the project.

Chapter 3 **“Project Description”** Presents relevant information about the project and its major components.

Chapter 4 **“Description of the Environment”** Establishes baseline conditions for physical,

biological and socio-economic conditions of the project area.

Chapter 5 “**Screening of Potential Environmental Impacts and Mitigation Measures**” Deals with the potential environmental impacts and mitigation measures, which have been proposed to mitigate the environmental impacts of the project.

Chapter 6 “**Environmental Management Plan**” Outlines institutional structure, training needs of the staff for the implementation of the proposed Environmental Management Plan and monitoring requirements, etc.

Chapter 7 “**Conclusions and Recommendations**” This chapter provides recommendations and concludes the whole report

2 CHAPTER 2: STATUTORY REQUIRMENT & STANDARDS

2.1 General

This section deals with the current policy as well as legal and administrative framework related to carrying out of Environmental Impact Assessment (EIA) of various projects. A number of laws exist in Pakistan, containing a number of clauses concerning protection of the environment.

Like other Projects, this project is also required to go through an Environmental Examination for getting a NOC under Section 12 of the Punjab Environmental Protection Act – 1997 amended in 2017 for Construction of LPG Storage & Filling Plant by Sangla Energy (Pvt.) Ltd.

According to environmental laws of the country development projects have to undergo the process of Environmental Impact Assessment (EIA) or Environmental Impact Assessment (EIA) in order to predict and mitigate the impacts of the development at an early stage. Based on nature, size, cost and associated impacts, the project under consideration has been categorized for EIA Study The Proposed Project is Construction of LPG Storage & Filling Plant The project falls under Schedule I (I) Any other project for which filling of an EIA is required by the Provincial Agency under sub regulations (2) of Regulation 5 made under section 12 of Punjab Environment Protection Act 1997 (Amended 2017) under which the Environmental Impact Assessment (EIA) is mandatory for getting Environmental Approval. The Director General, EPA Punjab is the authority to issue the requisite Environmental Approval after proper review of the project.

2.2 Existing Regulation and Framework

This EIA study has been carried out in the light of the policy guidelines of the preparation of EIA/EIA Reports under the procedure and practices formulated by the Provincial Environmental Protection Agency (EPA).

2.3 Relevant Legal / Institutional Framework

The applicable laws for the environmental study of the project are briefly given below. The proponent of the project will abide by the applicable laws and regulations.

2.3.1 National Conservation Strategy, 1992

On March 1, 1992, the Cabinet of Pakistan approved the National Conservation Strategy. It describes the stark reality of the country's deteriorating resource base and its implications for what is still largely a natural resource-based economy. It sets forth the beginnings of a plan to integrate environmental concerns into virtually every aspect of Pakistani economic life.

The strategy has three overriding objectives: conservation of natural resources, sustainable development, and improved efficiency in the use and management of resources.

2.3.2 PEPO, 1983 and PEPA, 1997 (Amended 2012)

In 1983, the Government of Pakistan issued an Environmental Protection Ordinance (EPO), which was replaced by the Pakistan Environmental Protection Act (PEPA) 1997, through an Act of Parliament. Now the PEPA 1997 has been replaced by Punjab Environmental Protection Act 1997 (Amended 2017)

Under Sec. 8 of Environment Protection Ordinance (EPO) 1983, it was necessary to carry out EIA / EIA for all development projects, but there were no EIA / EIA regulations under that ordinance.

Under section 12 of the Punjab Environmental Protection Act, 1997 (Amended 2017) it is mandatory to take an Environmental Approval Environmental Protection Agency for commencement of any construction of project.

2.3.3 National Environmental Policy 2005

Government of Pakistan (GOP) has notified National Environmental Policy 2005, for different projects / aspects in which guidelines/priorities have been given to undertake / commence the projects having significant environmental impacts.

2.3.4 Review of EIA and EIA Regulations, 2022

The GOP has issued Review of Environmental Impact Assessment and Environmental Impact Assessment Regulations 2022, to review the Environmental Impact Assessment (EIA) / Environmental Impact Assessment (EIA) Reports.

2.3.5 Guidelines for the Preparation and Review of Environmental Reports, 1997

The GOP has also framed guidelines for the preparation and review of EIA/EIA of projects in various developmental sectors.

2.3.6 Punjab Environmental Quality Standards (PEQS)

According to PEPA, 1997 (Amended 2017), Punjab Environmental Quality Standards (PEQS) were established for municipal and industrial effluents and air emissions.

2.3.7 Guidelines for Sensitive and Critical Areas

GOP has issued Guidelines for Sensitive and Critical Areas in October, 1997. The objective of the guideline is to provide guidance to project proponents and other stakeholders in the environmental assessment process, so that the proposed projects are planned and sited in way that protects the values of sensitive and critical areas.

2.3.8 Policy and procedures for the Filing, Review and Approval of Environmental Assessments, November-1997

Environmental Assessment is the Primary means of managing the approval of new development proposals in Pakistan. Environmental Assessment allows for the systematic examination of proposals, clear procedures which provide for the interests of relevant Government Departments and other stakeholders to carefully consider.

2.3.9 Guidelines for Public Consultation, Pakistan Environmental Protection Agency October, 1997

This guideline is part of a package of regulations and guidelines which include:

- Punjab Environmental Protection Act, 1997 (Amended 2017)
- Policy and Procedures for filing, review and approval of environmental assessments
- Guidelines for the preparation and review of Environmental Reports

- Guidelines for sensitive and critical areas
- Punjab Environmental Quality Standards (PEQS)
- Detailed sectoral guidelines

2.3.10 Punjab Wildlife Protection Act, 1974

This act was framed in 1974 by the Province Punjab and is about of protection and conservation of Wildlife.

2.3.11 Forest Act, 1927

This act was framed in 1927. The Forest Act, 1927 is still the basic charter for the forest departments in Pakistan. This law empowers provincial governments to manage forest areas.

2.3.12 Explosive Act, 1884

This act deals with explosives in prohibiting either absolutely or subject to conditions, the manufacture, possession or importation of any explosive which is so dangerous in character that, in the opinion of the appropriate Government, it is expedient for public safety to issue the notification.

2.3.13 Punjab Local Government Ordinance, 2001

Schedules 4 and 8 of this Ordinance pertain to environmental pollution. Under the Ordinance, the local councils are authorized to restrict projects causing pollution to air, water or land. They may also initiate schemes for improving the environment.

2.3.14 Pakistan Penal Code, 1860

This defines the penalties for violations concerning pollution of air, water bodies and land. Sections 268 to 291 are about offences affecting public health. The offences relating to public health safety and environment are as under;

- Sec 268: Public Nuisance
- Sec 269: Negligent act likely to spread infection of disease dangerous to life:
- Sec 270: Malignant act likely to spread infection of disease dangerous to life:
- Sec 278: Making atmosphere noxious to health:

- Sec 284: Negligent conduct with respect to poisonous substance:
- Sec. 290. Punishment for public nuisance in cases not otherwise provided for:
- Sec. 291. Continuance of nuisance after injunction to discontinue

2.3.15 Punjab Land Use Rules 2009

In January 2009 the Punjab Government notified “Punjab Land Use Rules 2009” for the clarification of Lahore Master Plan. In these rules permissible land use according to area type is defined.

2.3.16 Antiquities Act 1975

The law relates to protection of Antiquities / monuments / National / International heritage. The compliance of this Act is mandatory for the Installation of Generators. Under section 22 of the Act no development plan or scheme or new construction can be done within distance of 200ft from the boundary of the monuments/ National Heritage. There is no Historical Site / Monuments in the proximity of the project.

2.3.17 Solid Waste Management Rules 2005

The Solid Waste Management Department, has notified these rules for proper waste management.

2.3.18 Labor Laws

The labor laws apply on child labor and measuring instruments.

2.3.19 Safety & Civil Defense Laws

The civil defense laws provide details about safety, fire protection and civil defense.

2.3.20 Guidelines for Critical and Sensitive Area

These guidelines have been prepared under section 12 of PEPA-97 (Amended 2012) for protection and safety of critical and sensitive localities.

3 CHAPTER 3: PROJECT DESCRIPTION

3.1 Type & Category of Project

The project under consideration has been categorized for EIA Study. The Proposed Project “Construction of LPG Storage & Filling Plant by Sangla Energy (Pvt.) Ltd.” The project falls under Schedule I (I) Any other project for which filling of an EIA is required by the Provincial Agency under sub regulations (2) of Regulation 5 the EIA / EIA Regulations 2022 made under section 12 of Punjab Environment Protection Act 1997 (Amended 2017) under which the Environmental Impact Assessment (EIA) is mandatory for getting Environmental Approval. The Director General, EPA Punjab is the authority to issue the requisite Environmental Approval after proper review of the project.

3.2 Objectives of the Project:

The main objectives of the project

- To fulfill the market demand of LPG
- Provide low-cost Fuel.
- To provide better job opportunities to the local community including skilled and un- skilled workers during construction phase

3.3 Alternative Considerations

The main objective of this section is to consider various alternatives to make the project more environmentally friendly and sustainable with respect to the location and layout of the whole project. For the selection of appropriate layout, under existing site conditions, following environmental and social precautions were considered:

- Minimum environmental adverse impacts
- Minimum resettlement and land acquisition
- Cost effective solution

Keeping all these factors in view the site located at Marbah No. 59, Killa No. 20, 21, Mouza Chak Bhattianwala, Ferozwala, District Sheikhpura has been finalized for the Construction of LPG Storage & Filling Plant.

- The land is suitable for the project
- Land is owned by the Proponent
- Roads and other Basic Infrastructure are available
- Cheap labor for construction of the project is easily available in the project area in more than desired number.
- There is not any environment sensitive area near the project site. There is no worth mentioning forestry, biodiversity, fishing, flora and fauna heritage etc. in the proximity of the project site.

3.4 Location and Site Layout of the Project

The project site is located at Marbah No. 59, Killa No. 20, 21, Mouza Chak Bhattianwala, Ferozwala, District Sheikhpura

3.5 Present Land Use

The proposed project site is an open plot which is owned by the proponent.

3.6 Road access

The project site is located at Chak No.16/UCC 4 Km Marbah No. 59, Killa No. 20, 21, Mouza Chak Bhattianwala, Ferozwala, District Sheikhpura District Sheikhpura Transport is easily available. The labor and customer can easily reach at site.

3.7 Vegetation Features of the site

The Project site is a Plain open plot except for some grasses grown with few low bushes and thorny shrubs which have no medicinal value or considered endangered.

3.8 Cost and Magnitude of the operation

3.8.1 Cost

Total cost 52 million Rupees (including land cost)

Cost Break up

Land cost	10 Million Rupees
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Construction	40 Million Rupees
Environmental Budget	0.5 Million Rupees
Health and Safety Budget	0.5 Million Rupees
Others	1 Million Rupees
Total	52 Million Rupees

3.8.2 Magnitude

The man power during construction phase will be 35-40 workers and 10-12 workers during Operation Phase

3.9 Schedule of implementation

Project construction will start as soon as the no objection certificate from the environmental protection agency, Punjab will be issued. The Project will be implemented in 12 months after the issuance of the EPA NOC.

3.10 Description of the Project

Nature of the project: LPG Storage and Filling Plant

Nature of Area: Agricultural

Current Status: The project is in initial stage no construction has been done yet.

Category of the Project: The project falls under Schedule I (I) Any other project for which filling of an EIA is required by the Provincial Agency under sub regulations (2) of Regulation 5 and requires an EIA.

Area of the Project: 87120 S/F

Total covered Area: 5976 S/F

Storage Capacity of the Plant: (2×50 MT) with 91052 LTRs capacity each

Specifications

- The LPG storage & Filling plant design as per NFPA-58 and under Mineral & Industrial Gases Safety Rules 2010
- LPG Piping design ASME 31.3
- LPG tanks design as per ASME Sec VIII-Div-1
- Piping fabricated and welded by a qualified welder and tested in accordance with ASME Sec IX
- Electrical wiring according with the Electrical wiring regulation.
- Safety relief valves to protect LPG System to protect LPG system against over pressure at any time.
- All LPG lines are Sch-40, S. A 106 Gr. B.
- All LPG flanges are class 300 ANSI B16.9
- LPG piping test pressure is 525 Psi.
- 10% radiography test for LPG lines
- Fire water storage tank
- Fire water pump
- Fire water lines are design as per ASME B31.3
- Fire-fighting equipment are as per NFPA 15,20
- Fire line design pressure is 150 Psi.
- Fire lines test pressure is 225 Psi.
- Fire water lines fitting are class 150.

Water consumption during construction phase: 50 to 55 gallons

Water consumption during operational phase: 20 to 25 liters per day

5-6 Liters per day (only required for drinking)

Firefighting and Personal Protective Equipment

- Smoke Detectors

- 3 dry chemical powder fire extinguishers
- 03 CO₂ Fire Extinguishers
- 2 AFFF Fire Extinguisher (Aqueous Film forming foam)
- 02 DCP Trolley Mounted
- 02 AFFF Trolleys
- 02 CO₂ Trolleys
- Sand buckets
- 03 First Aid Boxes
- Emergency Torches
- Battery operated Fire Exits
- Safety signage's
- Central Alarm System
- Wireless communication
- Face mask
- Safety Goggles
- Safety Gloves
- Fire proof Suit
- Fire Blanket
- Safety shoes
- 02 Emergency Shut Down valve
- 02 Fire Hydrant
- 01 fire Water Pump
- Showering Pump

- 01 Jockey Pump
- Manual Sprinkler
- Auto Sprinkler

3.11 Restoration Plans and Rehabilitation Plan

None of the locals or residents will be relocated or any vegetation or infrastructure affected or destructed because the proposed site is a vacant plot, owned by the proponent hence the proposed project does not require any restoration or rehabilitation plan. The proponent will plant indigenous species of the plants to increase the aesthetic value of the area and improve the climatological conditions of the area.

3.12 Government and other Approvals

NOC from OGRA is attached in the annexure of the report

Environmental Approval from the EPA, Punjab, Lahore is the major requirement.

4 CHAPTER 4: DESCRIPTION OF THE ENVIRONMENT

4.1 General

Sheikhupura district is a district of Punjab province, Pakistan. Sheikhupura is bounded by 6 other districts of Pakistani Punjab Namely: Lahore, Nankana Sahib, Narowal, Hafizabad, Faisalabad and Gujranwala.

Agriculture is unquestionably important in the economy of Sheikhupura. While the main crops of Sheikhupura are wheat and rice. While main fruits are Guavas and citrus and vegetables are potatoes, carrots, cauliflower, tomato, onion, turnip, peas and okra.

The Pertaining physical and environmental conditions of the project area are described in this section. Data/Information for this section was collected from a variety of sources, included published literature (Secondary data), and surveys conducted for other studies in the area, and those that were conducted specifically for this study (*Primary data*).

Most of the information on geology and climate was collected from published literature and previously conducted studies. Samples were taken for ambient air quality, water and wastewater quality. The information given in the sections on vegetation and wildlife was taken from the concerned departments. Information on water resources came from both secondary sources as well as data that were collected specifically for the study.

Checklist methodology was used to establish the environmental profile of the proposed site.

The Project site is located at Marbah No. 59, Killa No. 20, 21, Mouza Chak Bhattianwala, Ferozwala, District Sheikhupura

4.2 Description of Environment

Based on the environmental checklist, socioeconomic questionnaires for consultations, field surveys were carried out to collect data on the physical, ecological and socioeconomic environmental aspect of the project site.

i) Physical Environment

The physical aspects of the project site covered the following:

- Soils - type of soils, erosion, stability

- Land use pattern of the area including agriculture crops, barren lands, industrial and residential use
- Affected buildings - residential, industrial, commercial, and structures of buildings (if any)
- Drainage pattern
- Available energy source(s)
- Other private/ public infrastructure/ utilities like pipelines, electric poles
- Water resources available both surface and groundwater
- Air quality and noise level in the project area

ii) *Ecological Environment*

In consideration of ecological environment, the following main aspects were studied:

- Existing vegetation along the project area
- Trees likely to be affected due to the project implementation (if any)
- Migratory species especially migratory birds
- Endangered species both flora and fauna
- Wildlife in the project area
- Forests and game reserves existing along the project area
- Beneficial plants and animals in the project area
- Aquatic life including fish resources
- Wetlands within the vicinity of the project area

iii) *Socioeconomic Environment*

Social assessment has attempted to determine the social implications in terms of assumed positive and negative impacts as a result of the implementation of the proposed project. The socioeconomic baseline data covered the following major aspects:

- Demographic profile

- Population
- Number of households
- Literacy status
- Nature of business/ occupations
- Livelihood/ income
- Living standard of the population
- Social infrastructure available
- Community perceptions about the Project

4.3 Physical Environment

4.3.1 Geomorphology and Geology

Pakistan can be divided into five broad physiographical regions. These are the mountainous regions of the north, the western highlands and plateaus, the sub-mountainous Indus region, the Pothwar Plateau, Salt Range, and the Indus Plain.

The area in general is of late Pleistocene age derived from mixed calcareous stratification. The surface layer of the soil is consists of either hard clay or brown colored loam, which is about three meter deep. It is followed by about one meter thick fine silty sand and fine sand. Below this layer there is a six meters layer of fine sand bed with traces of silt. The overall geological formation is suitable for surface as well as deep feeding root systems of trees, provided that water is available followed by adequate drainage. The area is not located within any prominent seismic zone, but occasional tremors have been experienced in the past.

Table 4-1 Geological Description of Region's in Pakistan

Region	Characteristics	Location	Height
Northern Mountainous	Hindu Kush, Karakorarn and	Northern Part of NWFP, Gilgit	Rises above 8,000 m

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	Himalayan Mountain Ranges	Agency, Northern Areas and Kashmir	
Western Highlands and Plateaus	Toba Kakar, Sulaiman, Central Baruhi, Saihan, Central Makran, Makran Coastal and Kirthar Ranges	Mainly in Balochistan, also parts of Sindh and KPK	Between 1,200 to 3,000 m
Sub-Montane Indus	Alluvium filled Basins	Plains of Peshawar, Kohat and Bannu	Less than 1,000 m
Potwar Plateau and Salt Range	Flat to gently undulating surface, broken by gullies, accelerated erosion, “bad land” topography	Mainly northern parts of Punjab, some parts of KPK	Less than 1,000 m
Indus Plain	Flood plains of the Indus, Jhelum, Chenab, Ravi and Sutlej Rivers	Punjab and Sindh	Less than 1,000 m

4.3.2 Topography

The topography of the project area is flat.

4.3.3 Soils

Soils form major relation with environment. They influence environment by their special qualities and more so through fertility. Types of soils besides providing food, clothes or housing population serve with special food and lumber products, medicinal plants etc.

Soil should not be taken as a lifeless residual layer but it is a very dynamic element of environment in which very complicated physical, chemical and biological activities are constantly proceeding. In this way it is a dynamically changing and developing body. Soil scientists restrict the word soil or solummerely to the surface material, which has come to have distinct layers or horizon over the extended period of time.

Soils have different meanings for different people. To a soil scientist it means the upper a few layers created through weather effect in which plants are grown . The solid portion of soil is both organic and inorganic. The organic part consists of both living and decayed plant and animal materials.

The soil is mostly loamy clay and loamy. Texture of the soil plays a very important role in its water holding capacity of the soil. The same is true for various faunal species, which are important for adding the nutrients in the soil by the breakdown of organic matter and making it suitable for the agriculture. Earthworms are said to play the best in this functioning

4.3.4 Seismicity

Seismic Zoning Map of Pakistan showing Proposed Project site area is presented as Figure – 4.1, indicating zones according to the Building Code of Pakistan - 2007. The city of Sheikhupura, the project site falls in Seismic Zone 2A according to the Seismic Zoning Map of Pakistan.

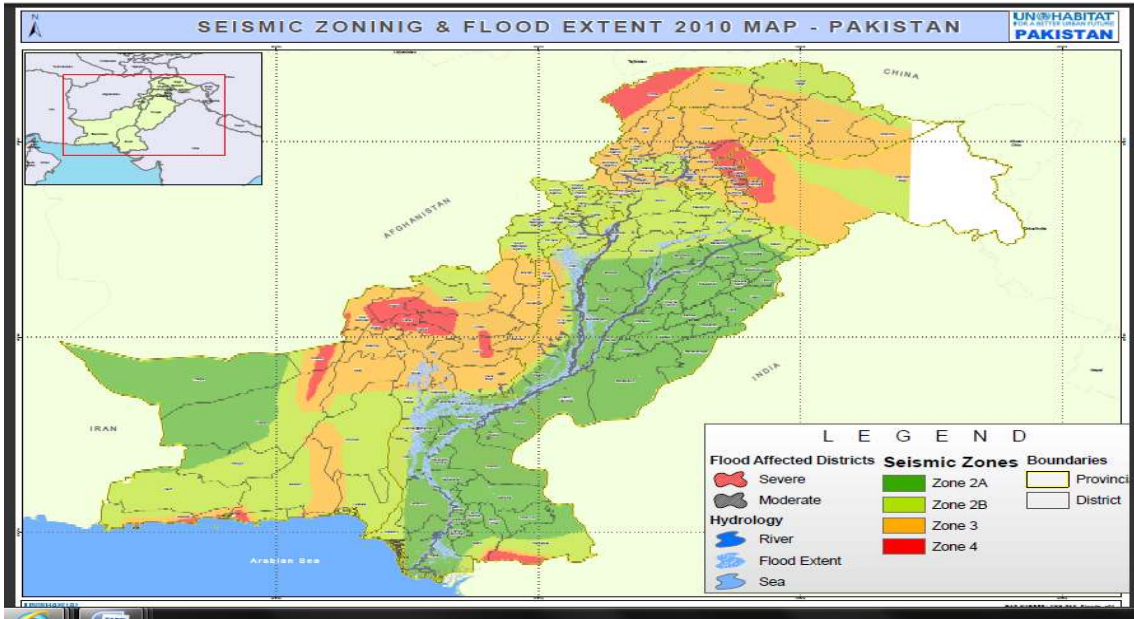


Figure 4-1 Seismic Zoning Map of Pakistan

4.3.5 Water resources

The area is sufficient but uncertain rainfall. The area can be classified as irrigated land. The canal system irrigates area around the site. Ground water is available at the depth of 100ft. the available water resources are adequate.

4.3.6 Drainage feature

The water supply and sewerage facilities have not been developed according to increase in population due to constraint of resources. As such the gap between supply and demand has been widened. Present sewerage coverage is 55% of the city.

4.3.7 Climate and air quality

The district has extreme climate, the summer season starts from April and continues till October. During the summer season, temperature ranges from 30 to 45 degrees Celsius. The winter season starts from November and continues till March. December and January are the coolest months with a mean minimum temperature of 5 Degrees.

The dust storms occur occasionally during the hot season, during June, July and August, Rainy weather alternates oppressive weather. The rainfall is 500mm per year. The mean minimum and maximum humidity during winter is 37% and 84%.

4.3.7.1 Description of seasons

- Winter (November to March) are the coolest months
- Spring (March to April) is pleasant with moderately cold.
- Summer (April to October) is very hot.
- Monsoon (June to August) are wet. Although temperature is milder but due to high humidity the heat is oppressive

4.3.7.2 Temperature

The temperature data was obtained from Metrological department Lahore. Temperature data for this region is shown below in table 4.2 & 4.3

Table 4-2 Annual Temperature Mean (Max) for the Last 10 years

Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
2008	23.0	28.0	35.0	41.0	45.0	45.0	42.0	41.0	36.5	35.0	29.0	25.5
2009	21.0	27.0	35.0	42.0	44.0	49.0	41.0	40.0	39.0	34.0	30.0	27.0
2010	24.0	30.0	37.0	40.0	44.5	42.5	41.0	37.5	40.0	35.0	29.0	28.0
2011	21.0	25.0	31.0	38.0	41.0	48.0	38.0	39.0	38.0	37.0	29.0	24.0
2012	25.0	33.0	36.0	45.0	46.0	44.5	43.0	41.0	38.0	37.0	30.0	25.0
2013	30.0	30.0	33.0	40.0	42.0	48.0	40.0	40.0	37.0	35.0	30.0	24.0
2014	22.5	29.0	35.0	42.5	46.0	48.0	41.0	42.0	47.0	37.0	32.0	26.0
2015	24.5	28.0	34.5	44.5	49.0	49.5	48.0	44.5	40.0	39.0	24.0	24.0
2016	24.0	30.0	41.0	47.0	49.0	50.5	46.0	41.0	40.0	39.0	29.0	22.0
2017	22.5	25.0	38.0	44.0	48.0	50.0	45.0	44.0	40.0	38.5	30.0	25.0
Average	23.7	28.6	35.6	42.4	45.5	47.3	42.5	41.0	39.6	36.7	29.2	25.1

(Metrological department of Pakistan, Lahore)

Table 4-3 Annual Temperature Mean (Min) for the Last 10 years

Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
2008	5.0	6.0	12.0	18.5	26.0	27.0	23.5	22.0	19.0	17.5	11.0	6.0
2009	0.0	9.0	7.0	15.0	20.0	24.0	22.0	22.0	20.0	17.0	10.0	8.0
2010	5.0	10.5	18.0	15.5	17.0	22.0	23.5	23.5	23.0	14.5	12.0	9.0
2011	7.0	8.5	14.0	17.0	22.0	25.0	25.0	21.0	20.0	15.0	9.0	6.0
2012	6.5	11.5	12.0	16.5	21.0	21.0	17.0	19.5	17.0	17.0	10.0	6.0
2013	3.5	9.0	10.0	18.0	22.0	23.0	24.0	21.5	20.0	20.0	16.0	8.5
2014	6.0	7.0	17.0	18.0	22.0	22.0	23.5	24.0	20.0	19.0	13.0	7.0
2015	7.0	12.0	17.0	16.0	18.0	26.0	22.0	22.0	23.0	19.0	14.0	10.0
2016	4.0	11.0	16.0	20.0	19.0	19.0	24.0	21.5	21.0	16.0	13.0	9.0
2017	3.0	9.0	12.0	17.5	22.0	23.0	22.0	21.0	23.0	18.0	13.0	8.0
Average	4.7	9.4	13.5	17.2	20.9	23.2	22.7	21.8	20.6	17.3	12.1	7.8

(Metrological department of Pakistan, Lahore)

4.3.7.3 Rain falls and Hydrology

Precipitation is in the form of rainfall. Towards the end of June, monsoon conditions appear and during July-August and part of September, rainy season alternates with intervals of sultry weather. Most of the rainfall occurs during July-September. Some winter cyclonic rains received during February and March. This pattern of rainfall will support xerophytes vegetation and all introduced flora shall largely depends upon year-round irrigation.

Ground water is the subsurface water that resides in the zone of saturation. In the zone of saturation, the voids (Pores) between the soil particles are filled with water. The water table is the upper boundary of the zone of saturation. The water table is also defined as the surface at which the fluid pressure in the pores is equal to the atmospheric pressure. Above the water table is the zone of aeration, or unsaturated zone. The water table surface in humid climate tends to follow the topography of the land surface, provided that the aquifer is unconfined. A sloping water table implies that ground water is flowing from a point of higher elevation to one of the lower elevations. The water table intersects the land surface where there is surface water.

When an overlaying impermeable layer confines the aquifer, the water will be under pressure and will rise in a well that is cased to the aquifer.

Table 4-4 Mean Rainfall in the Region (mm)

Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
2008	0.00	0.00	3.09	3.28	3.04	10.95	29.72	4.56	4.63	0.54	0.19	0.00
2009	0.15	0.77	0.70	0.00	0.35	1.78	1.43	19.18	3.67	0.65	0.00	0.39
2010	1.51	10.27	2.42	0.40	1.10	2.00	9.97	14.56	10.32	0.00	1.30	0.70
2011	7.32	2.23	0.41	4.03	2.78	5.97	13.39	5.28	1.58	0.80	0.82	3.92
2012	3.91	6.18	4.28	1.46	2.53	1.92	28.64	12.46	4.52	0.38	0.00	0.00
2013	2.20	2.04	4.54	0.44	1.66	9.61	42.06	34.31	2.12	0.72	1.35	9.56
2014	0.00	16.33	8.82	0.54	3.33	17.52	9.28	15.24	6.24	0.00	0.00	0.98
2015	5.92	4.55	0.50	6.17	0.79	17.79	12.77	17.77	10.01	1.61	0.10	3.45
2016	0.91	1.45	1.70	4.39	2.65	1.06	9.67	15.72	2.25	0.38	1.54	0.00
2017	0.72	4.34	1.86	0.00	3.73	4.85	21.98	30.82	6.40	1.20	0.00	0.90
Average	2.06	4.87	2.69	2.35	2.13	7.07	17.92	16.89	5.11	0.75	0.48	1.81

(Metrological department of Pakistan, Lahore)

4.3.7.4 Relative Humidity

Relative humidity in the project area varies between (31.1% to 69%). The higher humidity during summer is due to higher rates of evapotranspiration, as the monsoon rain, irrigation and kharif cropping pattern favor its rise. Presently the indigenous as well as exotic flora is fairly adjusted to the hydrological cycle in the area.

The relative humidity is given in **Table 4.5**

Table 4-5 Relative Humidity in the Region

MONTHS	AVERAGE	MAXIMUM	MINIMUM
January	85	90	55
February	58	83	27
March	57	77	28
April	44	77	11
May	26	49	13
June	26	42	8
July	73	84	58
August	77	94	59
September	73	89	55
October	56	83	26
November	59	82	31
December	64	89	23

(Metrological department of Pakistan, Lahore)

4.3.7.5 Wind Velocities and Direction

The prevalent wind velocity is 10-25 Kmp/h. on some days there is storms of 60 Kmp/h. mostly the summers are windy. But at times the winter winds can blow above 25 Kmp/h and cause extreme cold. The indigenous vegetation, the exotic flora and the fauna is adequately adjusted with the pattern of prevalent wind velocity in the area. The predominant wind directions and velocity are depicted in Table 4.6.

Table 4-6 wind direction data and speed

MONTHS	Morning	Afternoon
January	NW 3kmph	NW 4kmph
February	NW 3kmph	NW 3kmph

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March	NNW 4kmph	NW 5kmph
April	NNW 4kmph	SW 3kmph
May	WNW 6kmph	WNW 6kmph
June	ESE 6kmph	ESE 6kmph
July	ESE 8kmph	ESE 6kmph
August	ESE 5kmph	ESE 6kmph
September	SE 5kmph	SE 6kmph
October	NW 5kmph	NW 2kmph
November	NW 2kph	NW 2kph
December	NNW 1kmph	NNW 2kmph

(Metrological department of Pakistan, Lahore)

4.4 Ecological Environment

Ecology data is necessary to identify and assesses the main effects, which that development is likely to have on the environment in this particular case, with reference to the following parameters.

- Flora and fauna
- Soil
- Water and air
- Climate
- Landscape
- Material assets
- Human beings, cultural heritage, social cohesion
- The interaction between any of the foregoing

4.4.1 Floral survey

4.4.1.1 Trees

- Rosewood

- Sheesham
- Keekar
- Peeloo
- Bohar
- Gaz
- Nim
- Eucalyptus
- Mesquite

4.4.1.2 Herbs and Shrubs

Some shrubs are also found in the area which includes

- Rose (Ghulab)
- Calatropisprocera (AKK)
- Chenopodeiumbetrys (Bathu)
- Lotus (Kanwal)
- Cannabis sativa (Bhang)

4.4.1.3 Grasses

- Khabbal grass
- Tandia Grass
- Deela Grass
- Madana Grass

4.4.1.4 Agricultural Crops

- Wheat
- Cotton
- Maize
- Sarson
- Sorgum

There is not any worth mentioning flora at the project site.

4.4.2 Fauna

4.4.2.1 Mammals

- Buffaloes
- Cows
- Goats
- Dogs
- Cats
- Jackals
- Porcupines
- Hyaena
- Rats

4.4.2.2 Birds

- Hawk
- Kite
- Parrot
- Partridge
- Common crow
- Sparrow
- Lali
- Pigeon
- Dove

4.4.2.3 Reptiles

- Snakes
- Lizards

4.4.2.4 Amphibians

- Frogs
- Toads

4.4.2.5 Insects

- Black ants
- Dragon fly
- Butterflies
- Honey bees
- House flies

It is important to note that there are number of factors which can change the findings of the survey. These include seasonal variations like temperature variation, humidity in the atmosphere etc. also the patterns of small migration of different birds vary from bird to bird and season to season.

4.5 The Socioeconomic Environment

This section provides an overview of the socioeconomic conditions and cultural mores in the project area. The information included here is based upon a simple survey of settlement in the area during which interviews were conducted with communities.

Socioeconomic conditions of the area depends upon the population, employment level, trade and businesses, custom, religion, social activities, occasion and their social cohesion.

People living in the vicinity mostly belong to a middle class. It was observed that mostly people live in independent family systems, among these few like to live in joint family system as the load is distributed among the different family members. Similarly families who are living in joint family system are of the view that joint family system create misunderstandings among families and limit the opportunities of progress.

Most of the inhabitants have their own houses and few of them were living on rent. It was observed that most of the people have those diseases which are common in rainy season.

4.5.1 Medical Facility

The area has many public and private hospitals. Galini Hospital, Civil Hospital Sheikhpura, Trauma Center Sheikhpura, Yousaf Qurashi Hospital, General Hospital, Shifa Hospital, Children Clinic, Center City Hospital, Punjab Hospital, Yasir Hospital. There is no medical college in public and private sector in Sheikhpura.

4.5.2 Administrative setup

The tehsil municipal administration is a body corporate and consists of the Administrator, Tehsil Municipal Officer, 4 Tehsil officers and other officials of the local council service and officials of the offices entrusted to the Tehsil Municipal Administration and exercise all functions and power as have been assigned to him under Ordinance. The Tehsil Municipal Officer is acting as coordinating and administrative officer in-charge of Tehsil Officer.

4.5.3 Quality of Life

4.5.3.1 Religion

The population of Sheikhpura is over 99% Muslim.

4.5.3.2 Customs

The peoples are very much concerned about castes and beliefs, visiting shrines is very common among them

4.5.3.3 Languages

As per 1998 census of Pakistan Punjabi language is spoken by 95%. Punjabi dialects spoken in the city are

- Majhi or standard (Majority)
- Malwi (Migrated people from India)

Other languages includes

- Urdu being national language is spoken and understood
- English is also understood and spoken by the sizable educated people.

4.5.3.4 Dress

Majority of the people wear Qameez and Shalwar. English dress, shirt and Trousers are also common in Sheikhpura as well like other big cities of Pakistan.

4.5.4 Industry

According to census of manufacturing industries of 1987-1988, the value-added generated in large-scale industries was higher in Sheikhpura than in Lahore. The GRP of the city for the year 1993 has been estimated as Rs. 6,260 million that constitutes about 32% of the district's GRP. The

industrial sector contributes with 68% to the GRP and 43% total employment. The total number of establishments in the city has been estimated between 11,500 and 120,000 for 1993.

4.5.5 Occupation

Major economic activity in the area is trade and businesses there are people who are working for different industries, departments, government and non-governmental organizations, agriculture and cultivation.

4.5.6 Education

Sheikhupura which is near to Lahore is known as the better education facility of Pakistan with more colleges and universities than any other city in the country. There are also numerous private & government schools such as: Govt. Post Graduate College Sheikhupura, Govt. P.G. College for women Sheikhupura, Govt. Commercial College Sheikhupura, Punjab College Sheikhupura, Govt. Comprehensive High School Sheikhupura, Govt. Liaqat High School Sheikhupura, Govt. Islamia High School Sheikhupura and Beacon House School System etc.

4.5.7 Infrastructure

Electricity is available through WAPDA to local communities. Telephone services are available in the area. Water requirement is met through tube wells and WASA. Sufficient medical facilities are available in the project area. Private informal spiritual practitioners and Hakeems also exist in the area. Available infrastructure can be summarized as follows:

- Postal facilities are available
- Electricity is available to local inhabitants
- Transport service is available in all direction
- Telephone facilities are available in the area

4.5.8 Agriculture

Sheikhupura is basically flat plain and is extremely ideal for agriculture. The district has extreme climate: the summer season starts from April and continues till October. During summer season, temperature ranges from 30 to 45 degree Celsius. The winter season starts from November and continues till March. December and January are the coolest months with the mean minimum temperature of 5 degrees.

The dust storms occur occasionally during the hot season, during June, July and August. Rainy weather alternates with oppressive weather. The rainfall is 500mm per year. The mean minimum and maximum humidity during winter is 37% and 84%. About 3,736 hectares of land area is under forest.

Agriculture is unquestionable important major factor in Sheikhpura economy. While main crops of Sheikhpura are Sugarcane, Wheat and Rice. While main fruits are Guavas and Citrus and main vegetables are potatoes, carrot, Cauliflower, Tomato, Onion, Turnip, Peas and Ladyfinger.

4.5.9 Population

Sheikhpura District has total population of 2444000 and per square population density is 759 according 1998 censuses.

4.5.10 Site of physical, cultural heritage:

There are no documented or protected sites of archaeological, cultural, historical & religious significance in the project area. No visible signs were observed of such sites while conducting the field work.

5 CHAPTER 5: SCREENING OF POTENTIAL ENVIRONMENTAL IMPACTS AND MITIGATION MEASURES

5.1 Project Location

The proposed project site is located at Marbah No. 59, Killa No. 20, 21, Mouza Chak Bhattianwala, Ferozwala, District Sheikhpura

5.2 Identification and Analysis of Potential Impacts

This section discusses the potential environmental impact of the project on the physical, biological and socio-economic resources and, where applicable, identifies mitigation measures that will reduce, if not eliminate, its adverse impact. The assessment carried out in this section is based on potential impacts on overall environment and receptors within the project area. The proponent intends to construct LPG Storage & Filling Plant. The potential adverse impacts of these processes have been discussed in this chapter and their mitigation measures are given. The Proponent itself is environment conscious; and will abide by all the regulations given by local Government. The assessment carried out in this section is based on potential impacts on overall environment and receptors within the project area, and is organized in the following sub-sections:

- Impacts associated with design Phase
- Impacts associated with Construction
- Impacts associated with Operations

5.3 Planning and Design Phase

Planning principles and design considerations have been reviewed and incorporated into the site planning process whenever possible. The concepts considered in design of the proposed project are:

- no land acquisitions
- most suitable construction methodology.

Anticipated environmental impacts during design phase is described in table below:

Table 5-1 Environmental Impacts during Design Phase

Environmental Aspects	Summary of Impacts and Mitigation Measures	
	Potential Impacts	Mitigation Measure
Existing Conditions	<ul style="list-style-type: none"> • No major impacts. • Cutting of wild, rough and long grasses can be a hurdle. 	<ul style="list-style-type: none"> • No mitigation.
Planning Initiative	<ul style="list-style-type: none"> • Construction of an efficient infrastructure. 	<ul style="list-style-type: none"> • Strong building structure will be constructed.
Change of Land Value	<ul style="list-style-type: none"> • Establishment of the proposed project will enhance the land value of the Project Area. This will be a minor positive impact. 	<ul style="list-style-type: none"> • No mitigation measure required
Emergency Response	<ul style="list-style-type: none"> • Disasters such as earthquakes, flooding and other manmade disasters, such as fires, may occur which have to be considered for minimizing their impacts. This will be a permanent and moderate negative impact. 	<ul style="list-style-type: none"> • Necessary fire-fighting equipment and first aid boxes will be provided. • Training will be provided to the workers.

5.4 Construction Phase

This section explains how the proposed project will affect the physical aspects of the environment and its mitigation measures to manage the impacts. Although the impacts would be temporary in nature and localized, even then specific measures are proposed to reduce such impacts.

Anticipated potential environmental impacts during construction/ replacement phase are described in table below.

Table 5-2 Environmental Impacts during Construction Phase

Environmental Aspect	Summary of Potential Impacts and Mitigation Measures	
	Potential Impacts	Mitigation Measure
Dust Emissions	<ul style="list-style-type: none"> Dust emission during construction activities may result in deterioration of ambient air quality in the vicinity of the project site. Earth work and Excavation exposing. Hauling and vehicle movement. 	<ul style="list-style-type: none"> Water will be sprinkled daily when there is an obvious dust problem on all exposed surfaces to suppress emission of dust. Vehicular movement will be restricted to a specific time for supplies of construction material. Site workers and drivers will wear dust masks especially during dry and windy weather conditions to avoid health risk.
Gaseous Emissions	<ul style="list-style-type: none"> Gaseous emissions may arise from construction equipment may deteriorate the surrounding air quality and have impact on person exposed to it. High concentration may also cause vegetation damage by clogging the photosynthesis process in plants. 	<ul style="list-style-type: none"> All vehicles and other equipment used during the construction will be maintained in good working condition in order to minimize emission of pollutants. Emissions from the machinery and vehicles will be monitored on regular basis to ensure compliance to PEQS.
Construction Noise	<ul style="list-style-type: none"> Noise will generate during construction activities which is a concern both from worker exposure standpoint as well as ambient noise levels experienced by the local area, especially during early morning and night time site work activities 	<ul style="list-style-type: none"> Use of adequate ear plugs at all exhaust systems will be mandatory. Blowing of horn by the project related vehicles will be strictly prohibited.

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		<ul style="list-style-type: none"> Workers will be provided with personnel protective equipment at places of high noise levels
Water	<ul style="list-style-type: none"> The water pollution will not be significant as this will be used only in small quantity and there will be no addition of large number of contaminants to water 	<ul style="list-style-type: none"> Loss of water will be minimized. Water conservation practices will be followed during construction period.
Terrestrial Ecosystem	<ul style="list-style-type: none"> The proposed project is construction of LPG Storage and Filling Plant in open plot so there is no ecosystem within the plot so there will be no loss to any flora or fauna 	<ul style="list-style-type: none"> Night time construction activities will be avoided. The plants and grass near the proposed site boundary will be protected to the extent possible. The damaged area due to construction work will be restored after completion of construction work. After the construction phase, plants & trees will be planted and landscaping of the area will be done to increase its aesthetic value.
Solid Waste	<ul style="list-style-type: none"> The construction phase of the project is expected to generate construction waste; packing waste; scrap waste and excess materials waste. The waste can also pose a health hazard if disposed off improperly and may pollute ground, and waterways. 	<ul style="list-style-type: none"> Recyclable material will be separated at source. Waste bins will be placed at the construction site for waste materials including paper, metal, wood, empty cement bags. The recyclable waste will be sold to or picked up by waste contractors All non-hazardous waste material that cannot be recycled or reused will be disposed properly.

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	<ul style="list-style-type: none"> Waste may result from construction material, packing material, scrap metal from construction and equipment fabrication, vehicle maintenance 	
Relocation of Public Utilities	<ul style="list-style-type: none"> The construction of the proposed structure will not involve relocation of any public utilities. 	<ul style="list-style-type: none"> Mitigation measures not required
Traffic Congestion and Disturbance to People	<ul style="list-style-type: none"> There will be no traffic congestion and disturbance to the people. All the constructional work of the project will be carried out within the project premises. So there will be no traffic congestion on road passing in front of the project site. 	<ul style="list-style-type: none"> Adequate mitigation measures will be provided within the project area to avoid any disturbance in the traffic flow on the road. Parking space will be provided for the vehicles working for the project activities within the project premises.
Poverty alleviation	<ul style="list-style-type: none"> Construction of the proposed project will generate the employment opportunities for the population living nearby area. This will be a temporary minor positive impact. 	<ul style="list-style-type: none"> No mitigation measures required.
Sanitary wastewater	<ul style="list-style-type: none"> Sewerage water will be generated at the project site during the development activities). if the sanitary water is allowed to stagnate in water ponds on the site, it can create unhygienic conditions and some of the sewerage water may also percolate the soil, thereby, polluting the groundwater. This may pose a moderate negative impact. 	<ul style="list-style-type: none"> The septic tank will provide to treat the sewage before its discharge into near-by drain.

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Workers' health, safety and environment	<ul style="list-style-type: none"> The construction activities impose certain negative impacts on health and safety of the workers and public in case of unsafe and/or unfavorable working conditions. Mitigation measures will be required to minimize health and safety related negative impacts of the project. This will be a moderate negative impact. 	<ul style="list-style-type: none"> The Contractor will ensure that the construction workers/labour are trained in safety procedures for all relevant aspects of construction; Workers will be provided with proper safety equipment such as helmets, goggles, masks, where required and considered necessary; Formal emergency procedures will be developed for construction site in case of an accident. First aid kits and other necessary equipment will be kept available at site along with the list of emergency phone numbers to be contacted in case of any emergency/incident; Proper illumination will be provided at night; Sides of the excavation area will be covered with protection sheets to avoid any sliding of soil; Warning signs will be displayed in local language where considered necessary. Fence will be used all around the site.
Employment Generation	<ul style="list-style-type: none"> The project will provide employment opportunities for local people during construction Phase Positive impact. 	<ul style="list-style-type: none"> No mitigation required
Aesthetic value of area	<ul style="list-style-type: none"> The presence of heavy duty vehicles and equipment, temporary structures, stoke piles at construction site, may result in Impacts on aesthetics and landscape character 	<ul style="list-style-type: none"> Site will be properly fenced off. All solid waste will be collected and handed over to the waste collector. Use of recycled material is encouraged

**Dengue
Eradication**

- Stagnant water can cause breeding of Mosquitoes.

- Unwanted material and litter will be removed on frequent basis.
- Spray in the premises to control the breeding of Mosquitoes and also control the other sources of its breeding such as all the water tanks will be covered, there will be not any stagnant water in the premises

5.5 Operational Phase

This section outlines potential impacts during the operation phase gathered from a process that included a review of available documentation, verified during the site visit, i.e. how, where and when the proposed development can interact and affect the environment significantly, and details what mitigation measures may be taken to counteract these impacts.

The impacts with possible mitigation measures have been presented in table below.

Table 5-3 Environmental Impacts during Operational Phase

Environmental Aspect	Summary of Potential Impacts and Mitigation Measures	
	Potential Impacts	Mitigation Measure
Meteorology	<ul style="list-style-type: none"> • During operational stage there will be no impact on pattern of rainfall, climate and other related factors. Thus its impact on meteorology will be insignificant 	<ul style="list-style-type: none"> • No mitigation measures required
Ground Water	<ul style="list-style-type: none"> • There will be no production of hazardous waste during the operational phase of LPG Storage and Filling Plant. 	<ul style="list-style-type: none"> • No mitigation measures required
Sewage	<ul style="list-style-type: none"> • Sewage will be generated from washrooms. 	<ul style="list-style-type: none"> • Septic Tanks will be available for sewage.
Air Quality	<ul style="list-style-type: none"> • As the project does not include any manufacturing process so no air pollution will be produced. However the LPG Storage and Filling Plant. 	<ul style="list-style-type: none"> • No mitigation measures required
Biological Environment	<ul style="list-style-type: none"> • The operational phase of LPG Storage and Filling Plant will not pose any adverse impacts on Biological Environment. 	<ul style="list-style-type: none"> • No mitigation measures required
Noise Level	<ul style="list-style-type: none"> • Small amount of noise will be generated during operation activity of the LPG Storage and Filling Plant due to loading / unloading of the LPG cylinders. And during filling of the Cylinders. 	<ul style="list-style-type: none"> • Ear plugs will be provided to the workers.
Health and Safety	<ul style="list-style-type: none"> • Open fires by workers can result in accidents. • Accidental fires may result due to LPG. 	<ul style="list-style-type: none"> • Fire safety precautions to prevent or reduce the likelihood of a fire to break out. • Placing and maintaining fire extinguishers in easily accessible places. • Display of Safety Information Sign Boards at required places. • Adequate training of workers on use of firefighting system to deal with the situation as well as environmental and waste management trainings.
Solid waste	<ul style="list-style-type: none"> • Small amount of solid waste will be generated 	<ul style="list-style-type: none"> • Solid waste will be handed over to the waste collector.

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- Dengue Eradication
- Stagnant water can cause breeding of Mosquitoes.
 - Spray in the premises to control the breeding of Mosquitoes and also control the other sources of its breeding such as all the water tanks will be covered, there will be not any stagnant water in the premises.

5.6 Potential Environmental Enhancement Measures

The proposed project has a number of positive impacts, which include:

- The project does not involve any land acquisition issue because the land is already owned by the Project proponent.
- No residential and commercial structures will be affected.
- The project has a potential to create employment opportunities, and will improve the standard of living/ livelihood of the population in the project area.
- The project will fulfill the market demand of LPG.

6 CHAPTER 6: ENVIRONMENTAL MANAGEMENT PLAN

6.1 Institutional Arrangements

The mitigation measures will be implemented and made monitored by the Project proponent, which will be supported by Contractor, Design and Supervision Engineer and Environmental Expert.

The following institutional arrangements will be necessary to implement the EMP effectively and to deal with the other environment related issues.

Project proponent shall be responsible for ensuring compliance to environmental requirements.

Proponent

- Will comply with all applicable legislation and is conversant with the requirements of the EMP
- Assesses all activities requiring special attention as specified and/or requested by the Engineer and/or Environmental Expert
- Ensures that the Contractor conducts all activities in a manner that minimizes disturbance to residents and the public in general
- May, on the recommendation of the Engineer and/or Environmental Expert order the Contractor to suspend any or all works on site if the Contractor or his subcontractor/supplier fails to comply with the said environmental specifications

Engineer

This agency:

- Complies with all applicable legislation and is conversant with the requirements of the EMP
- arranges information meetings for and consults with interested and affected parties about the impending project activities
- enforces and monitors compliance with the requirements of EMP on site
- assesses the Contractor's environmental performance in consultation with the Environmental Expert
- documents in conjunction with the Contractor, the state of the site prior to commencing

project activities

Environmental Expert

This individual:

- Briefs the Contractor on the requirements of the environmental specification and/or EMP
- Advises the Engineer on the interpretation, implementation and enforcement of the environmental specifications and other related environmental matters
- Monitors and reports on the performance of the contractor/ project in terms of environmental compliance with the EMP to the Engineer/ proponent
- Provides technical advice relating to environmental issues to the Engineer

The Contractor

This individual / agency:

- Complies with all applicable legislation, is conversant with the requirements of the EMP, and briefs staff about the requirements of same
- Ensures any sub-contractors/suppliers, who are utilized within the context of the contract, comply with the environmental requirements of the EMP. The Contractor will be held responsible for non-compliance on their behalf
- Supplies method statements for all activities requiring special attention as specified and/or requested by the Engineer or Environmental Expert during the duration of the Contract.
- Bears the costs of any damages/compensation resulting from non-adherence to the EMP or written site instructions
- Conducts all activities in a manner to minimize disturbance to residents and the public in general, and foreseeable impacts on the environment
- Appoints one full time Environment expert for implementation of EMP, community liaison and reporting on day

Health and Safety Representative

- Briefs the Contractor on the requirements of the Health and Safety specifications and/or EMP
- Advises the Engineer on the interpretation, implementation and enforcement of the Safety

Precautions

- Monitors and reports on the performance of the contractor/ project in terms of Health and safety compliance with the EMP to the Engineer/ proponent
- Provides technical advice relating to Health and Safety issues to the Engineer

6.2 Training Schedules

Training and orientation programmes shall be organized by the Environmental Experts, Engineers and proponent for the contractors, laborers, and technical/ office staff of the contractors, site engineers and the relevant staff for building their capacity with regards to principles and procedures of environmental management, pollution abatement measures, health and safety measures and implementation of EMP. Employees will be trained to use fire extinguishers in case of fire break out.

The potential impacts, mitigation measures, monitoring mechanism and responsibility of concerned institution are presented in Table 6.2.

6.3 Summary of impacts and their Mitigation Measures

Table 6-1 Summary of Impacts and their Mitigation Measures

During Construction Phase	
<ul style="list-style-type: none"> • Dust emission during construction activities may result in deterioration of ambient air quality in the vicinity of the project site. • Earth work and Excavation exposing. • Hauling and vehicle movement. 	<ul style="list-style-type: none"> • Water will be sprinkled daily when there is an obvious dust problem on all exposed surfaces to suppress emission of dust. • Vehicular movement will be restricted to a specific time for supplies of construction material. • Site workers and drivers will wear dust masks especially during dry and windy weather conditions to avoid health risk.
<ul style="list-style-type: none"> • Gaseous emissions may arise from construction equipment may deteriorate the surrounding air quality and have impact on person exposed to it. 	<ul style="list-style-type: none"> • All vehicles and other equipment used during the construction will be maintained in good working condition in order to minimize emission of pollutants.

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<ul style="list-style-type: none"> • High concentration may also cause vegetation damage by clogging the photosynthesis process in plants. 	<ul style="list-style-type: none"> • Emissions from the machinery and vehicles will be monitored on regular basis to ensure compliance to PEQS.
<ul style="list-style-type: none"> • Noise will generate during construction activities which is a concern both from worker exposure standpoint as well as ambient noise levels experienced by the local area, especially during early morning and night time site work activities 	<ul style="list-style-type: none"> • Use of adequate ear plugs at all exhaust systems will be mandatory. • Blowing of horn by the project related vehicles will be strictly prohibited. • Workers will be provided with personnel protective equipment at places of high noise levels
<ul style="list-style-type: none"> • The water pollution will not be significant as this will be used only in small quantity and there will be no addition of large number of contaminants to water 	<ul style="list-style-type: none"> • Loss of water will be minimized. Water conservation practices will be followed during construction period.
<ul style="list-style-type: none"> • The proposed project is construction of LPG Storage and Filling Plant in open plot so there is no ecosystem within the plot so there will be no loss to any flora or fauna 	<ul style="list-style-type: none"> • Night time construction activities will be avoided. • The plants and grass near the proposed site boundary will be protected to the extent possible. • The damaged area due to construction work will be restored after completion of construction work. • After the construction phase, plants & trees will be planted and landscaping of the area will be done to increase its aesthetic value.
<ul style="list-style-type: none"> • The construction phase of the project is expected to generate construction waste; packing waste; scrap waste and excess materials waste. • The waste can also pose a health hazard if disposed off improperly and may pollute ground, and waterways. • Waste may result from construction material, packing material, scrap metal from construction and equipment fabrication, vehicle maintenance 	<ul style="list-style-type: none"> • Recyclable material will be separated at source. • Waste bins will be placed at the construction site for waste materials including paper, metal, wood, empty cement bags. • The recyclable waste will be sold to or picked up by waste contractors

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	<ul style="list-style-type: none"> All non-hazardous waste material that cannot be recycled or reused will be disposed properly.
<ul style="list-style-type: none"> The construction of the proposed structure will not involve relocation of any public utilities. 	<ul style="list-style-type: none"> Mitigation measures not required
<ul style="list-style-type: none"> There will be no traffic congestion and disturbance to the people. All the constructional work of the project will be carried out within the project premises. So there will be no traffic congestion on road passing in front of the project site. 	<ul style="list-style-type: none"> Adequate mitigation measures will be provided within the project area to avoid any disturbance in the traffic flow on the road. Parking space will be provided for the vehicles working for the project activities within the project premises.
<ul style="list-style-type: none"> Construction of the proposed project will generate the employment opportunities for the population living in the area. This will be a temporary minor positive impact. 	<ul style="list-style-type: none"> No mitigation measures required.
<ul style="list-style-type: none"> Sewerage water will be generated at the project site during the development activities). if the sanitary water is allowed to stagnate in water ponds on the site, it can create unhygienic conditions and some of the sewerage water may also percolate the soil, thereby, polluting the groundwater. This may pose a moderate negative impact. 	<ul style="list-style-type: none"> The septic tank will provide to treat the sewage before its discharge into near-by drain.
<ul style="list-style-type: none"> The construction activities impose certain negative impacts on health and safety of the workers and public in case of unsafe and/or unfavorable working conditions. Mitigation measures will be required to minimize health and safety related negative impacts of the project. This will be a moderate negative impact. 	<ul style="list-style-type: none"> The Contractor will ensure that the construction workers/labour are trained in safety procedures for all relevant aspects of construction; Workers will be provided with proper safety equipment such as helmets, goggles, masks, where required and considered necessary; Formal emergency procedures will be developed for construction site in case of an accident. First aid kits and other necessary equipment will be kept available at site along with the list of emergency phone numbers to be contacted in case of any emergency/incident;

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	<ul style="list-style-type: none"> ▪ Proper illumination will be provided at night; ▪ Sides of the excavation area will be covered with protection sheets to avoid any sliding of soil; ▪ Warning signs will be displayed in local language were considered necessary. ▪ Fence will be used all around the site.
<ul style="list-style-type: none"> • The project will provide employment opportunities for local people during construction Phase • Positive impact. 	<ul style="list-style-type: none"> • No mitigation required
<ul style="list-style-type: none"> • The presence of heavy-duty vehicles and equipment, temporary structures, stoke piles at construction site, may result in Impacts on aesthetics and landscape character 	<ul style="list-style-type: none"> • Site will be properly fenced off. • Contractor to exercise strict care in disposing waste, with proof of disposal at the approved site provided • Identification of suitable waste disposal site with enough capacity to hold additional waste to be produced by the proposed construction activities • Use of recycled material is encouraged • Unwanted material and litter will be removed on frequent basis.
<ul style="list-style-type: none"> • Stagnant water can cause breeding of dengue. 	<ul style="list-style-type: none"> • Spray in the premises to control the breeding of Dengue and also control the other sources of its breeding such as all the water tanks will be covered, there will be not any stagnant water in the premises.
Operational Phase	
<ul style="list-style-type: none"> • Sewage 	<ul style="list-style-type: none"> • Sewage will be generated from washrooms.
<ul style="list-style-type: none"> • Small amount of noise will be generated during operation activity of the LPG Storage and Filling Plant due to loading / unloading 	<ul style="list-style-type: none"> • Ear plugs will be provided to the workers.

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of the LPG cylinders. And during filling of the Cylinders.	
<ul style="list-style-type: none"> • Open fires by workers can result in accidents. • Accidental fires may result due to LPG. 	<ul style="list-style-type: none"> • Fire safety precautions to prevent or reduce the likelihood of a fire to break out. • Placing and maintaining fire extinguishers in easily accessible places. • Display of Safety Information Sign Boards at required places. • Adequate training of workers on use of firefighting system to deal with the situation as well as environmental and waste management trainings.
• Small amount of solid waste will be generated	• Solid waste will be handed over to the waste collector.
• Stagnant water can cause breeding of Mosquitoes.	• Spray in the premises to control the breeding of Mosquitoes and also control the other sources of its breeding such as all the water tanks will be covered, there will be not any stagnant water in the premises.

6.4 Equipment and Instruments Maintenance Details

The maintenance of equipment is necessary for

- Achieving the best performance for the equipment.
- Reduction of the risks resulting from operation conditions to minimum levels.

For the current proposed project, it is therefore recommended to

- Prepare and keep the record of equipment maintenance log. (Template of log is attached in annexure of the report)
- Prepare proper maintenance sheets for vehicles.
- Use fully tuned vehicles and machinery during construction.
- Proper maintenance of machinery during operation.

6.5 Environmental Budget

Environmental budget for is approximately 0.2 million rupees.

185 thousand Rupees for tree plantation

15 thousand rupees for dengue eradication spray

6.6 Changing in planning and design

Proponent has not any plan for next 25 years to change in planning and design. Addition of facilities shall be done in phases based on the requirements.

6.7 Land Acquisition, Resettlement, and Compensation

The land of the proposed site is in the ownership of the project proponent. No additional land will be acquired: therefore, no resettlement and compensation issues are expected.

6.8 Environmental Management Plan

Environmental management plan (EMP) is the most important output of an EIA study. It will include the adverse impacts during design, construction and operation phases of this project and their mitigation measures along with allocation of responsible persons and/ or agencies for the respective mitigation.

The EMP will guide the environmentally-sound project activities and ensure efficient lines of communication between the Engineer, contractors, and Implementing Agency (IA). The EMP identifies three phases of development as:

- (i) Site establishment and preliminary activities;
- (ii) Construction phase;
- (iii) Post construction/operational phase.

The purpose of the EMP is to ensure that the activities are undertaken in a responsible non-detrimental manner with the objectives of:

- (i) Providing a pro-active, feasible and practical working tool to enable the measurement and monitoring of environmental performance onsite;
- (ii) Guiding and controlling the implementation of findings and recommendations of the environmental assessment conducted for the sub-project;
- (iii) Detailing specifications deemed necessary to assist in mitigating the environmental

impact of the subproject;

- (iv) Ensuring that safety recommendations are complied with.

A copy of the EMP must be kept on site during the construction period at all times. The EMP will be made binding on all contracts or operating on the site and will be included in the Contractual Clauses. Non-compliance with, or any deviation from, the conditions set out in this document constitutes a failure in compliance.

The Contractor is deemed not to have complied with the EMP if:

- Within the boundaries of the site, site extensions and haul/ access roads there is evidence of contravention of clauses
- If environmental damage ensues due to negligence
- The contractor fails to comply with corrective or other instructions issued by the engineer within a specified time
- The contractor fails to respond adequately to complaints from the public

6.9 Environmental Monitoring Plan

Environmental Monitoring is a very important activity required in order to ensure environmental protection and management at the project site both during the construction and operations phases. Regular monitoring of environmental aspects that can likely be affected during construction and operation of the Project.

The proponent will be responsible for execution of the monitoring plan through a well-equipped monitoring team at the project site both during construction and operation phases. The budget for the execution of this monitoring plan including monitoring equipment and salaries of monitoring staff shall be incorporated in the operational budget of the project.

Table 6-2 Environmental Management Plan (EMP)

Sr. No.	Impacts/ Activity causing Environmental Impacts	Monitoring Location	Responsible Personals	Mitigation Measures
<u>A. Construction Stage</u>				

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Sr. No.	Impacts/ Activity causing Environmental Impacts	Monitoring Location	Responsible Personals	Mitigation Measures
1	Dust	Construction Site	Contractor/ Environmental Engineer	<p>Water will be sprinkled on the site on daily basis to avoid the dust pollution.</p> <p>Construction material will be covered while transporting to the site</p> <p>Safe unloading of material to minimize dust emission.</p> <p>Use of water mist, covering sheets or windshields to avoid blowing of dust from soil stockpiles and other windblown materials.</p> <p>Face masks will be provided to the workers</p>
2	Noise	Vehicles/ Machinery	Contractor/ Environmental Engineer	<p>Construction vehicles / machinery will be checked regularly for noise level during construction phase.</p> <p>Vehicles and machinery are to be kept in good working order and to meet manufacturer's specifications for safety, fuel consumption etc.</p> <p>Selection of less noisy equipment.</p> <p>Prohibit use of pressure horns</p> <p>Proper maintenance of vehicles and construction equipment.</p> <p>Personal protective equipment (PPEs) will be provided to the workers.</p>
3	Soil contamination	Construction site	Contractor/ Environmental Engineer	<p>There will be no soil contamination at the project site.</p>

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Sr. No.	Impacts/ Activity causing Environmental Impacts	Monitoring Location	Responsible Personals	Mitigation Measures
		Vehicle/ Machinery		Contractor will allow Properly maintained vehicles and construction equipment to avoid any leakage. Washing of vehicles will be not allowed at the project site.
4	Air pollution	Vehicle/ Machinery/and construction material	Contractor/ Environmental Engineer	Proper maintenance of vehicles and construction equipment. Spraying of pesticides will not take place under windy conditions. If stockpiles are exposed to windy conditions or heavy rain, material will be covered. Stock piles may further be protected by the construction of low brick walls around their bases
5	Smoke Emissions	Construction Vehicle/ Machinery	Contractor/ Environmental Engineer	Vehicles /Construction machinery will be checked regularly for smoke emissions during construction phase. Only properly maintained vehicles will be allowed on the site.
6	Safety of the Workers and nearby community	Construction Site	Environmental Manager and First Aid Provider	Provision of Personal Protective Equipment (PPE) to all the workers. First aid will be provided immediately and in case of any serious accident, affected person will be shifted to the nearest hospital immediately.
7	Traffic Movement / Management	Construction Site	Environmental Manager	Site and its surrounding will be regularly monitored to check the

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Sr. No.	Impacts/ Activity causing Environmental Impacts	Monitoring Location	Responsible Personals	Mitigation Measures
				traffic problem due to movement of construction vehicles.
8	Periodic Emergency Drills	Construction Site	HSE Officer	To provide necessary training to all the labor so that they can keep themselves safe during the emergency, and specify an easily approachable place for gathering in case of emergency.
9	Construction waste	Construction site	Contractor, Environmental Manager	The majority of the construction waste will be inert material and it is proposed to reuse it for construction purposes where possible. Excavation material will either be used for infill during construction or be removed from the site by appropriately permitted waste collectors.
10	Social impacts	Construction site	Contractor	<p>Contractor's activities and movement of staff to be restricted to designated construction areas</p> <p>The conduct of the construction staff when dealing with the public or other stakeholders shall be in a manner that is polite and courteous all the time</p> <p>The Engineer and Contractor are responsible for ongoing communication with those people that are interested in / affected by the projects</p>
11	Stagnant Water	Construction site	Contractor	<p>There will be not any stagnant water in the premises.</p> <p>Spray in the premises to control the breeding of Dengue and also</p>

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Sr. No.	Impacts/ Activity causing Environmental Impacts	Monitoring Location	Responsible Personals	Mitigation Measures
				control the other sources of its breeding such as all the water tanks will be covered,
12	Extra / surplus Construction material and construction equipment.	Construction site	Contractor/ Environmental Engineer	<p>Timely removal of waste from the site to avoid congestion at work place.</p> <p>Construction waste will be collected and disposed separately from other waste.</p> <p>Care will be taken during handling and disposal of waste. .</p> <p>Safe transportation of construction equipment from the site.</p> <p>The contractor must ensures that all structure, equipment, materials and facilities used or created on site for/ or during construction activities are removed.</p>
13	Sewage	Temporary washroom at construction site	Sanitation in-charge	Sewage will be passed through the septic tank before discharge to main drain.
<u>B. Operation Stage</u>				
1	Noise Level	LPG Storage and filling area and offices	Environmental Manager	Use of horns will be strictly prohibited and will be monitored on daily basis.
2	Solid waste	LPG Storage and filling area and offices	Environmental Manager	Waste bins will be placed at the site for waste materials including food waste, packing, paper etc.

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Sr. No.	Impacts/ Activity causing Environmental Impacts	Monitoring Location	Responsible Personals	Mitigation Measures
				<p>The recyclable waste will be sold to or picked up by waste contractors</p> <p>All non-hazardous waste material that cannot be recycled or reused will be disposed properly.</p>
3	Personal protective equipment and safety signs	LPG Storage and filling area and offices	Health and safety representative	<p>Personal protective equipment will be provided to the workers to avoid any serious accidents.</p> <p>Safety signs will be posted at all required places of the storage and filling area.</p>
4	Proper Parking of Vehicles	Parking area	Security Staff	Parking of vehicles in such a manner that vehicles can enter and exit without any hindrance
5	Provision of First Aid in case of any Emergency	LPG Storage and Filling area and offices and offices	First Aid Provider	First aid will be provided immediately to save the life of affectee. Ambulance will be called up to shift the affectee to the nearest medical facility.
6	Health and Safety	LPG Storage and filling area and offices	Health and safety Representative	<p>Fire safety precautions to prevent or reduce the likelihood of a fire to break out.</p> <p>Placing and maintaining fire extinguishers in easily accessible places.</p> <p>Display of Safety and Information Sign Boards at required places.</p> <p>Adequate training of workers on use of firefighting system to deal with the situation as well as</p>

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Sr. No.	Impacts/ Activity causing Environmental Impacts	Monitoring Location	Responsible Personals	Mitigation Measures
				environmental and waste management trainings.
7	Sewage		Sanitation in-charge	Sewage will be passed through the septic tank before discharge to main drain.
8	Fire-fighting equipment	LPG Storage and filling area and offices	HSE Officer	Proper fire-fighting equipment will be installed.
9	Tree Plantation	Open area	Environmental Manager	Proponent will plant indigenous plants to improve the aesthetic value of the area and climatological condition

6.10 Costed Environmental Management Plan

Safety Budget: 0.5 million rupees (Personal Protective Equipment, safety signs, firefighting equipment, safety masks, coverall, face masks and first aid boxes)

Budget for Environment management includes dengue management, plantation: 0.5 million Rupees

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Table 6-3 Costed Environmental Management Plan

Sr. No.	Impacts	Monitoring Location	Responsible Personals	Remarks
1	Personal protective equipment and safety signs	LPG Storage and filling area	Health and safety representative	<p>Fire safety precautions to prevent or reduce the likelihood of a fire,</p> <p>The maintenance and cleaning plan for generators will be followed strictly,</p> <p>Placing and maintaining fire extinguishers will be easily accessible,</p> <p>Display of Safety and Information</p> <p>Sign Boards at required places.</p> <p>Adequate training of workers on use of firefighting system</p> <p>Safety Budget: 200 thousand rupees (Personal Protective Equipment, safety signs, fire fighting equipment)</p>
2	Tree Plantation	Open area of LPG Storage and filling area	Environmental Manager	<p>Proponent will plant indigenous plants to improve the aesthetic value of the area and climatological condition</p> <p>Cost: 185 thousand rupees for tree plantation</p>
3	Spray for Dengue Eradication	Open area	Health and safety representative and Environmental Manager	<p>Spray for Dengue Eradication and other disinfectants</p> <p>Cost:20 thousand Rupees</p>

7 CHAPTER 7: RECOMMENDATIONS AND CONCLUSIONS

7.1 RECOMMENDATIONS

The Environmental Impact Assessment Report and survey results are finally evaluated to recommend the following:

- The present Environmental Impact Assessment Report of LPG Storage and Filling Plant meet the administrative and legal framework of the EPA Punjab.
- All the required PPEs should be provided to the workers working in the LPG Storage and Filling Plant.
- The Proponent should assign task of proper housekeeping in and around the Plant.
- Consider Fire safety precautions to prevent or reduce the likelihood of a fire to break out.
- Placing and maintaining Fire Fighting Arrangements as per the International Standard NFPA in easily accessible places.
- Display of Safety and Information Sign Boards at required places.
- Adequate training of workers on use of firefighting system to deal with the situation as well as environmental and waste management trainings.

7.2 CONCLUSION

The EIA Report of LPG Storage and Filling Plant is made to fulfill the legal requirement of Punjab Environmental Protection Act 1997 amended in 2017. In order to address the potentially adverse impacts of the project, particularly during the operational phase, an EMP has been developed, which will further improve the environmental performance of the project. The EMP assigns roles and responsibilities, provide environmental guidelines and discuss the scope of Environmental Management Plan.

The Construction of LPG Storage & Filling Plant by Sangla Energy (Pvt.) Ltd.

Marabah No. 59 Killa No.20,21 Mouza Chak Bhattianwala, Ferozwala District Sheikhpura.

is completely safe and no adverse environmental impacts are postulated,

The EIA Report has thoroughly assessed all the potential environmental impacts associated with the project. The environmental impacts identified by the study are manageable. Site specific and practically suitable mitigation measures are recommended to mitigate the impacts. The EIA concludes that operational phase of proposed project will not pose any major adverse environmental impacts on environment if the anticipated impacts are properly mitigated and the Environmental management Plan is properly implemented.

Therefore, the project under consideration does not require any further environmental study; hence the EIA Report has been completed for the said project so the project of Construction of LPG Storage & Filling Plant by M/s Sangla Energy (Pvt.) Ltd. is recommended for the Environmental Approval and issuance of NOC from the EPA, Punjab.

8 Annexure

8.1 Annexure: A: Glossary

- 1) **Ambient:** relating to the immediate surroundings of something
- 2) **Aesthetic:** concerned with beauty or the appreciation of beauty.
- 3) **Agency:** A business or organization providing a particular service on behalf of another business, person, or group.
- 4) **Aquifer:** An aquifer is an underground layer of water-bearing permeable rock, rock fractures or unconsolidated materials (gravel, sand or silt) from which groundwater can be extracted using water well.
- 5) **Base line:** Conditions prevailing at the time of study or before initiation of any project
- 6) **Climate:** the weather conditions prevailing in an area in general or over a long period.
- 7) **Consultant:** A person who provides professional advice or services to companies for fee.
- 8) **Construction waste:** waste generated from the buildings and construction industry which includes material like Bricks, concrete, ceramics, debris and empty cement bags etc.
- 9) **Conservation:** Official supervision of rivers, forests, and other natural resources in order to preserve and protect them through prudent management.
- 10) **Discharge:** means spilling, leaking, pumping, depositing, seeping, releasing, flowing
- 11) **Drainage:** natural or artificial removal of surface & subsurface water from an area.
- 12) **Demographic:** A single vital or social statistic of a human population, as the number of births or deaths.
- 13) **Effluent:** means any material in solid, liquid or gaseous form or combination thereof being discharged from industrial activity or any other source and includes a slurry, suspension or vapor
- 14) **Environment budget:** Monetary assets reserve for environmental activity.
- 15) **Environment:** means air, water and land; all layers of the atmosphere; all organic and inorganic matter and living organisms; the ecosystem and ecological relationships; buildings, structures, roads, facilities and works; all social and economic conditions affecting community life; and the inter-relationships between any of the factors mentioned

- 16) Environmental Impact Assessment:** means an environmental study comprising collection of data, prediction of qualitative and quantitative impacts, comparison of alternatives, evaluation of preventive, mitigatory and compensatory measures, formulation of environmental management and training plans and monitoring arrangements, and framing of recommendations and such other components as may be prescribed
- 17) Fauna:** Animal life occurring in particular region or time.
- 18) Flora:** plant life occurring in particular region or time.
- 19) Hazardous Waste:** is waste that poses substantial or potential threats to public health or environment.
- 20) Environmental Impact Assessment:** means a preliminary environmental review of the reasonably foreseeable qualitative and quantitative impacts on the environment of a proposed project to determine whether it is likely to cause an environmental effect for requiring preparation of an environmental impact assessment
- 21) Impact:** the action of one object coming forcibly into contact with another.
- 22) Municipal Solid Waste (MSW):** more commonly known as trash or garbage consists of everyday items we use and then throw away, such as product packaging, grass clippings, furniture, clothing, bottles, food scraps, newspapers, appliances, paint, and batteries. This comes from our homes, schools, hospitals, and businesses
- 23) National Environmental Quality Standards:** means the permissible standards for emission of air pollutants and noise and for discharge of effluent and waste
- 24) Nuisance:** A person, thing or circumstances causing inconvenience or annoyance.
- 25) Ordinance:** An ordinance is a law enacted by a municipal body, such as a city council or county commission (sometimes called county council or county board of supervisors). Ordinances govern matters not already covered by state or federal laws such as zoning, safety and building regulations.
- 26) pH:** negative log of hydrogen concentration:
- 27) Proponent:** the person who intends to carry-out a proposed project.
- 28) Rehabilitation:** to restore to a condition of good health, ability to work.
- 29) Resettlement:** the settlement of people in different place.

- 30) **Resource:** stock or supply of money, materials, staff, and other assets that can be drawn on by a person or organization in order to function effectively
- 31) **Seismic Hazard:** A **seismic hazard** is the probability that an earthquake will occur in a given geographic area, within a given window of time, and with ground motion intensity exceeding a given threshold.
- 32) **Sustainability:** means such developments that meet the needs of the present generation without compromising the ability of future generations to meet their needs
- 33) **Sewage:** waste water and excrement conveyed in sewers.
- 34) **Waste:** means any material, substance, or by-product eliminated or discarded as no longer useful or required after the completion of a process
- 35) **Wastewater treatment plant:** a facility containing a series of tanks, screens, filters and other processes by which pollutants are removed from water

8.2 Annexure: B: List of abbreviation

EIA	Environmental Impact Assessment
NOC	No Objection Certificate
COD	Chemical Oxygen Demand
BOD	Biological Oxygen Demand
COD	Chemical Oxygen Demand
TSS	Total Suspended Solids
TDS	Total Dissolved Solids
EMP	Environmental Management Plan
NEQS	National Environmental Quality Standards
WHO	World Health Organization
PEPA	Pakistan Environmental Protection Act
PEQS	Punjab Environmental Quality Standards
WAPDA	Water and Power Development Authority
NCS	National Conservation Strategy
ppm	Parts per million
ppb	Parts per billion
EIA	Environmental Impact Assessment
SKP	Sheikhupura

8.3 Annexure: C: Consultant Details

EnviroSafe Consults has organized a team of Specialists to prepare an EIA Report for the said Project.

Team Members		
Name	Designation	Qualification
Dr. Hassan Zahid	Lead Environmental Professional	PhD Researcher Environmental Management
Mr. Abid Ali	Lead Environmental Professional	M. Phil. Environmental Sciences
Mr. Awais Hassan	Lead Environmental Professional	M. Phil. Environmental Sciences
Miss. Ayesha Hameed	Environmental Professional	MS. Environmental Sciences
Mr. Abdullah Zahid	Environmental Professional	M. Phil. Environmental Management LLB
Miss Rabia Arshad	Environmental Professional	M. Phil. Environmental Sciences

8.4 Annexure D: Consulted Organizations

EPA

The project falls under Schedule I (I) Any other project for which filling of an EIA is required by the Provincial Agency under sub regulations (2) of Regulation 5 and requires an EIA.

8.5 Annexure E: Equipment Maintenance Details Log

EQUIPMENT MAINTENANCE DETAILS LOG:

Date:

Sr no.	Name of Equipment	Model No.	Last Maintenance Done	Next Maintenance Planned
01				
02				
03				
04				
05				
06				
07				
08				
09				
10				

Signed By:

8.6 Annexure: F: References

Guidelines for Preparation and Review of Environmental Report

Guidelines for Public Consultation

Labor Laws

Meteorology Department Data (From Website)

National Environmental Policy

National Environmental Quality Standards (Self- Monitoring and Reporting by Rules, 2001)

ISO 45001 for Health and Safety

Punjab Environmental Protection Act, 1997 Amended in 2017

Review of (EIA/EIA) Regulations 2022

Pakistan Environmental Protection Order (PEPO) 1983

Sectoral Guide Lines For Environmental Reports, Industrial States

The Land Acquisition Act 1894

The Punjab Local Government Ordinance, 2001

8.7 Annexure: G: Training Schedule

Training Schedule:

During Construction Phase

Trainings	Responsibility	Duration	Timings	Training required for
Fire Fighting	HSE Officer/third party consultant	1 Day	9:00 am to 5:00pm	Security staff/construction workers
First aid	HSE Officer/third party Consultant	1 Day	9:00 am to 5:00pm	Security Staff/construction workers

During operational Phase

Trainings	Responsibility	Duration	Timings	Training required for
Fire Fighting	HSE Officer/third party consultant	1 Day	9:00 am to 5:00pm	Workers/ staff
First aid	HSE Officer/third party Consultant	1 Day	9:00 am to 5:00pm	Workers/Staff
Health and safety training	HSE Officer/third party Consultant	1 Day	9:00 am to 5:00pm	Workers/Staff

8.8 Annexure: H: Solid waste management Plan

Waste Item	On-site Storage/Treatment Method	Off-site Treatment/Disposal Method	Anticipated Waste Removal Contractors
General (mixed)	Segregated Bin/Skip	Recovery/Disposal	To be appointed
Surplus Excavated Material	Stockpiling Topsoil, fractions to be in separate	Majority to be reused on-site. Possible beneficial reuse off-site	To be appointed
Timber	Segregate/Bin/Skip Reuse on-site where possible	Reuse	To be appointed
Plastic	Segregated Bin/Skip	Return to supplier, recycling or disposal	To be appointed
Metal	Segregated Bin/Skip	Deliver to metals merchant	To be appointed

8.9 Annexure: I: TORs

TERMS OF REFERENCE (TOR)

Title of Project	Construction of LPG Storage & Filling Plant by Sangla Energy (Pvt.) Ltd.
Title of Assignment	Preparation of Environmental Impact Assessment (EIA) Report
Proponent	Mr. Abid Hameed Bhatti
Location of Project	Proposed project is located at Marabah No. 59 Killa No.20,21 Mouza Chak Bhattianwala, Ferozwala District Sheikhupura.
Procurement Method	Formal Quotation

Introduction:

The proponent intends to construct LPG Storage & Filling Plant by M/s Sangla Energy (Pvt.) Ltd. located at Marabah No. 59 Killa No.20,21 Mouza Chak Bhattianwala, Ferozwala District Sheikhupura. The plot is vacant no construction has been done yet.

Objectives of Environmental Impact Assessment (EIA):

The primary purpose of EIA process is to provide proponents and decision makers as well as members of the public, with an understanding of the potential environmental effects of the proposed action, so as to avoid or minimize environmental impacts wherever possible bearing in mind the cost and benefits of using the environmental resources in this particular project. EIA is an important tool for incorporating environmental concerns at the project inception/design stage level. The general objectives of the EIA Study are to provide the following information.

- Baseline Data about the environment condition in the project area.
- Information on potential impacts of the project and the characteristics of the impacts, magnitude and distribution.
- Information on potential mitigation measures to minimize the impacts.

- Preparation of Environmental Management & Monitoring Plan
- To provide an understanding of the environmental impacts of the project for decision making.

Scope of Work:

Scope of work includes all the activities required under EPA Guidelines and national legislation.

- Include the review of legal and institutional framework.
- Describe the project perspective, components and activities.
- Establish baseline condition of effected environment.
- Identify, assess and evaluate key adverse environmental impacts that may result from the activities of the project and address them.
- Identify, assess and recommend impact monitoring programme and compliance auditing programmes and estimate environmental cost.
- Prepare comprehensive Environmental Mitigation & Monitoring Plan (EMMP);
- Report all the findings and conclusion in the form of EIA Report

Key Deliverables:

- 5 Hard Copies of EIA/EIA Report shall be filed as per Regulation (7) of Review of EIA / EIA Regulations, 2022
- 1 Soft Copies of EIA/EIA Report shall be submitted along with report as per Regulation (7) of Review of EIA / EIA Regulations, 2022
- EIA/EIA Report shall be accompanied by;
 - An application, in the form set out in Schedule IV of Review of EIA / EIA Regulations, 2022
 - Copy of receipt showing payment of the review fee as per the clause 6 of EIA/EIA Regulation 2022
- Reply of Query Letter (will be submitted if EPA require additional information)

Qualifications:

Personnel involved in the survey and preparation of EIA Report of the said project will have the following qualifications;

- MS/M Phil Environmental Sciences
- PhD Environmental Management

Responsibilities of Proponent:

- Responsible to pay all the dues of the consultants as per the agreed terms and conditions.
- According to regulation of Review of EIA and EIA Regulations, 2022, proponent shall pay, at the time of submission of EIA/EIA, a non-refundable review fee to EPA.
- Provide all documents / details required for completion of EIA Report
- Proponent shall be responsible for paying any fines / penalties levied by the EPA Punjab or Environment Tribunal
- Proponent shall be responsible for the validity and correctness of the information provided to the consultants.

Client

Consultant

8.10 Annexure: J: Tree Plantation Plan

Tree Plantation Plan	
Total Budget for Tree Plantation	185 thousand rupees is allocated for tree plantation
Height of Plants	Height of plants will be 4-6 ft.
Species	Seasonal indigenous and ornamental plants like Cassia Fistula (Amaltas), Dalbergia Sissoo (Sheesham), Azadirachta Indica (Neem) Passi flora (passion flower), Gardenia (Gardeniar), Cestrum Nocturnum (raatki rani) Jasmine Sambac (motia), Plumeria (Gul-e-cheen)

8.11 Annexure: K: Health, Safety and Emergency Response Procedure

Purpose

To identify, avoid or respond to potential threats to Health & Safety of workers & to provide healthy & danger free working environment & minimize the impact of emergency situation on employees, the public & the environment.

Scope:

This procedure is applicable at all levels of the project during Construction & Operational Phase.

Responsibilities

Management Representative	To design, implement, monitor the Health & Safety Program
HR & Admin. Manager	To implement & ensure the Health & Safety program and effective monitoring at all levels.
HSE Officer	To ensure Health & Safety requirements & handle emergency situation.
Chief Executive	To provide necessary resources for the effective implementation of the Health & Safety standards
Employees of all levels	To be aware of Health & Safety program

Health & Safety Representative:

Management Representative has been nominated as Health & Safety Representative, & is responsible for Health & Safety for all personnel & for the implementation of Health & Safety requirements of this procedure.

Health & Safety Committee:

To ensure compliance of Health & Safety requirements & create awareness among all employees about Health & Safety. The members of the committee are;

- Management Representative (MR)
- Manager Administration

- HSE Officer
- Chief Executive

Health & Safety Training:

The members of the Health & Safety committee hold meeting after every 01 month. Department Head is informed about the day & time of training. It becomes their responsibility to assemble the workers at scheduled time for the training session. The MR properly maintains the record of these training sessions.

Measures To Provide Health & Safety Environment:

Following are the measures provided for prevention of the potential threats to Health & safety as under.

- Adequate first aid supplies & trained first aid personnel are made available on site to face any emergency.
- To provide hospital treatment if required.
- Emergency lights should be installed in the construction as well as operational phase.
- Personnel Protective Health & Safety Equipment's are provided to the employees at no cost.
- .Potable water is provided to the workers.
- Health & Safety policy, relevant posters, safety signs, work instructions, internal & external telephone nos. are properly displayed at relevant location.

Activities during Emergency:

- A comprehensive plan has been chalked out to combat the emergency situation. Duties have been assigned to the entire relevant individuals. Following activities shall be performed during emergency.

Notification

Health & Safety representative will immediately reach emergency spot & guide Fire Fighting & First Aid Teams. Trained Fire Fighters & First Aid providers will perform their respective duties to overcome the emergency.

- The Safety Staff & selected persons from each site have been trained on the aspects of fire-fighting & first aid.

Health & Safety Training

In case of emergency the nearest Fire Brigade & Ambulance Service centers are contacted to meet

the Emergency situation in the construction & operational phase.

Shut Down of Certain Services

Considering the severity of the situation, all services & utilities like machines are shut downed by the concerned staff.

Analysis of the Emergency Situation

- The initial details of the accident / emergency are prepared by the relevant person.
- The management will conduct investigation in any emergency situation to avoid its happening in future. The accident report should include the following points for investigation.
 1. Analysis of the Loss
 2. Cause of Accident
 3. Contributory factors of accident
 4. Impact assessment
 5. Impact on Environment
 6. Impact on Human resources
- Recommendations shall be made on:
 - Preventive maintenance
 - Back up of data/file
 - Contact Insurance Companies
 - Re-establish utilities & Communications
 - Training needs (if any)

Emergency Preparedness

The Contractor will establish a comprehensive procedure to tackle the emergency situations under the guidance of the management of the project. Necessary precautions will be displaced at conspicuous places for the awareness of the workers & other employees.

Emergency Response Procedure

Purpose

This plan has been developed to:

- Control or limit any effect that an emergency or potential emergency may have during construction and operational phase of the project on neighboring sites and the

surrounding community.

- Facilitate emergency response and provide assistance on the site as may be appropriate to the occasion.
- To ensure communication of all vital information to appropriate internal and external parties as soon as possible.
- To facilitate reorganization activities so that operations can be resumed.
- To provide for training so that an appropriate level of preparedness can be continually maintained.
- To provide for a basis for updating and reviewing emergency procedures.

Definition

Emergency An emergency is any condition or situation which requires assistance over and above the capability of personnel present and which has the potential to cause serious injury or loss of life, major property damages and disruptions on-site: and/or off-site and requires the use of outside resources to handle it effectively.

Emergency Plan: The Emergency Plan basically provides a clear statement of definite assignments of responsibilities and authorities of the Emergency Organization. Its objective is to help contain and control incidents, to safeguard employees and others who may be affected and to minimize damage

Responsibilities

Emergency Controller

The Emergency Controller is overall responsible for establishing and operating the emergency plan; schedules and reviews trials of the emergency plan; ensures emergency coordinators have trained emergency squads; and decides the best use of resources during emergency

Fire Safety Coordinator

Fire Safety Coordinator refers to someone responsible for ensuring that updated fire service are available in the emergency control center; coordinator ensures trained fire fighters are available during construction and operational phase; and ensures that suitably trained alternate is available

First Aid Coordinator

First Aid Coordinator refers to someone responsible for ensuring that there is available a group of trained Emergency First Aiders Team to provide assistance to victims in emergency; and ensures basic first aid kits and equipment are available for emergency purposes.

Responsibility Emergency Coordinator

Site Emergency coordinator for Construction Phase & Operational Phase

The Emergency coordinator is responsible for:

- Incident control and safety of personnel
- Committing manpower, equipment, and materials required to implement this plan, control and remove any quantity of hazardous material released/discharged that may be harmful.
- Evacuating site personnel and / or responding to the incident as appropriate.
- Co-ordination activities with emergency services on the scene. Identifying and evaluating hazardous conditions at the site.
- Terminating operations where there are unnecessary risks due to hazardous conditions.
- Notifying local and state agencies (Fire, Emergency, Environmental, etc.)
- Taking steps to initiate the clean-up and decontamination process.
- Giving the “All Clear” indication with consultation with any public emergency officials when we can return to safe operations.
- Ensuring that all hazardous materials and waste has been dealt in an environmentally correct manner.
- Maintaining an effective and up-to-date Emergency Planning Program.
- Appointing delegates to carry out emergency duties.

Emergency response organization

The management and structure of ER teams on or near the proposed site.

- I First Aid Team Coordinator
- I Fire Fighter & Rescue Team Coordinator
- I Incident Command Center coordinator

MITIGATION MEASURES

The mitigation measures for potential environmental hazards are given below:

- All the required PPEs will be provided to the workers working.
- The Proponent will assign task of proper housekeeping in and around the Project site.
- Consider Fire safety precautions to prevent or reduce the likelihood of a fire to break out.
- Placing and maintaining DCP (Dry Chemical Powder) fire extinguishers of 6 kg each in easily accessible places.
- Display of Safety and Information Sign Boards at required places.
- Adequate training of workers on use of firefighting system to deal with the situation as well as environmental and waste management trainings.

8.12 Annexure: L: Disaster Management Plan

Fire Hazard

Disaster management: Fire extinguishers have been will be place at the storage and filling plant.

First aid training to the security staff and safety personnel.

Details of Firefighting and Personal Protective Equipment

- Smoke Detectors
- 3 dry chemical powder fire extinguishers
- 03 CO₂ Fire Extinguishers
- 2 AFFF Fire Extinguisher (Aqueous Film forming foam)
- 02 DCP Trolley Mounted
- 02 AFFF Trolleys
- 02 CO₂ Trolleys
- Sand buckets
- 03 First Aid Boxes
- Emergency Torches
- Battery operated Fire Exits
- Safety signage's
- Central Alarm System
- Wireless communication
- Face mask
- Safety Goggles
- Safety Gloves
- Fire proof Suit

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- Fire Blanket
- Safety shoes
- 02 Emergency Shut Down valve
- 02 Fire Hydrant
- 01 fire Water Pump
- Showering Pump
- 01 Jockey Pump
- Manual Sprinkler
- Auto Sprinkler

Training Schedule:

During Construction Phase

Trainings	Responsibility	Duration	Timings	Training required for
Fire Fighting	HSE Officer/third party consultant	1 Day	9:00 am to 5:00pm	Security staff/construction workers
First aid	HSE Officer/third party Consultant	1 Day	9:00 am to 5:00pm	Security Staff/construction workers

During operational Phase

Trainings	Responsibility	Duration	Timings	Training required for
Fire Fighting	HSE Officer/third party consultant	1 Day	9:00 am to 5:00pm	Workers/ staff
First aid	HSE Officer/third party Consultant	1 Day	9:00 am to 5:00pm	Workers/Staff

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Health and safety training	HSE Officer/third party Consultant	1 Day	9:00 am to 5:00pm	Workers/Staff
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8.13 Annexure: M: Other Documents

Base Line Data Collection



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Monitoring



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GPS Location



Lab Reports