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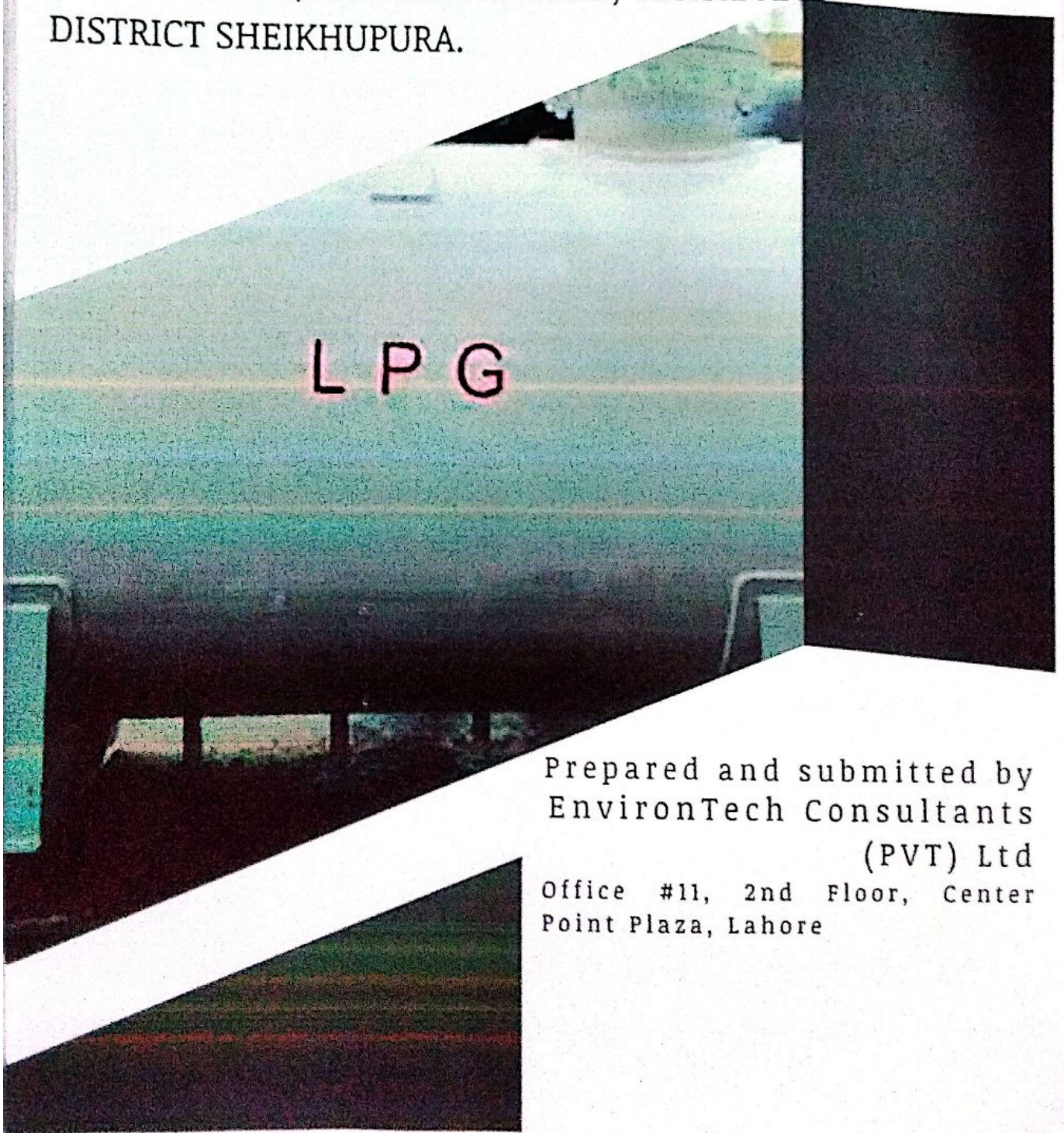


ENVIRONMENTAL IMPACT ASSESSMENT

enviroNTECH
CONSULTANTS

M/S PYRAMID GAS PVT. LTD.

MOUZA JEVAN PURA KALAN, BAGUM KOT ON
SHEIKHUPURA/FAISALABAD ROAD, TEHSIL AND
DISTRICT SHEIKHUPURA.



Prepared and submitted by
EnvironTech Consultants
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EXECUTIVE SUMMARY**1. Introduction**

This executive summary presents an overview of the main findings of the Environmental Impact Assessment Report for "Constructed project of M/S Pyramid Gas Pvt. Ltd. (LPG Storage & Filling Plant) At Mouza Jevan Pura Kalan, Bagum Kot on Sheikhpura/Faisalabad Road, Tehsil and District Sheikhpura. The main goal of the Constructed Project is to provide a safe, economic and environment friendly LPG for filling in the Vehicles. For this instance, Environmental Impact Assessment of the Project has been conducted in accord with the Punjab Environmental Protection (Amendment) Act, 2012 and IEE/EIA Regulations 2022. The process for conducting environmental assessment and the results of EIA are described in this document.

Table 1: Salient Features of Project

2.	Project Location	Mouza Jevan Pura Kalan, Bagum Kot on Sheikhpura/Faisalabad Road, Tehsil and District Sheikhpura.
3.	Proponent	Farhan Mumtaz S/O Mumtaz Hussain. R/O : House no. 412, Block 5, Muhalla Sector D-11, Green Town, Lahore.
4.	Consultant	EnvironTech Consultants (PVT) Ltd.
5.	Total Area	24,651 SFT
6.	Capacity of Project	2240 Water Liters of Total Gas Storage Capacity.
7.	Location of project	31°40'57.2"N 73°57'56.6"E
8.	Nature of Area	Self-developed commercial
9.	Present status of Land Use	Facility was already constructed for CNG filling.
10.	Land use in the surroundings of project site.	The project site is surroundings by:
	North	Vacant/Open Plot
	East	Building
	West	Road

	South	Road
11.	Cost of Project	PKR 45 million PKR
12.	Product	LPG Storage & filling
13.	By-Products	N/A
14.	Description of project	The project is the established LPG Storage & Filling Plant.
15.	Nearby emergency services i.e., Hospital, police station, rescue, fire brigade etc.	DHQ Hospital (8.5 Km), Rescue 1122 office (7 Km), Police Station (6.5 Km).
16.	Water Source	Ground Water
17.	Status of Project	LPG Storage tank installed (not in operation).
18.	Source of Power	WAPDA

2. Project Objectives

The main objectives of this EIA are to establish baseline environmental conditions, identify potential impacts and suggest suitable mitigation measures for the executed project. This study has been accomplished in line with the prescribed legal provisions of guidelines and directives of the Punjab Environmental Protection Agency.

The overall aim of the Project is to provide a safe, economic and environment friendly storage of LPG for LPG suppliers and direct consumers.

This executive summary presents an overview of the main findings of the EIA Report for the aforesaid project.

3. BENEFITS OF PROJECT

The project is providing following benefits:

- Maintain continuity in supply of LPG to the consumers through distributors and quality of services to the consumers.
- Ease in availability of filled LPG during crisis period.
- Help to overcome the scarcity of bulk LPG due to huge gap between demand and supply.

- ✚ Discourage deforestation with reduction in use of firewood and fossil fuels.

4. SITE ALTERNATIVES

A place in filling station is acquired by the proponent and is used for the Constructed of LPG plant. Selected site is an unproductive land and is going to be brought into commercial use which will be beneficial for the locals as they will get jobs. The site is well located in regard to the following:

- ✚ Easy road access to the market
- ✚ No settlements at a safe distance
- ✚ No watercourse within a safe distance
- ✚ No ecologically sensitive or declared protected area within 3 km of the selected site

5. SCREENING

As per PEPA 2012, the Initial Environmental Examination (IEE)/ Environmental Impact Assessment (EIA) Regulations, 2022 the Project falls in category A of projects mentioned in Schedule II.

6. Major Impacts and Recommended Mitigation Measures

a. Beneficial/Positive Impacts:

- ✚ Maintain continuity in supply of LPG to the consumers through distributors and quality of services to the consumers.
- ✚ Ease in availability of filled LPG during crisis period.
- ✚ Discourage deforestation with reduction in use of firewood and fossil fuels.
- ✚ Provision of employment and stimulation of local economy.
- ✚ Enhancement of community development through implementation of corporate social responsibilities.
- ✚ Help to overcome the scarcity of bulk LPG due to huge gap between demand and supply.
- ✚ Positive changes in lifestyles will occur due to reduce in expenses of transportation for refilling.

b. Negative Impacts:

Effect on Geomorphology and Soil	• Spill Prevention and Response Plan for storage, use and transfer of fuel and hazardous materials should be prepared. • Workers should be trained on spill prevention and response plan. • Thick Plantation is recommended after completion of project to minimize land slippage and soil erosion impacts. • Fuels, lubricants, and chemicals should be stored in covered areas, underlain with impervious lining. • Maintenance and washing of vehicles and equipment should be carried out at designated areas. • Any hard surface or tarpaulin should be spread on area to prevent soil contamination. • Regular inspections should be carried out to detect leakages in construction vehicles and equipment. • Appropriate arrangements, including shovels, plastic bags and absorbent materials, should be available near fuel storage areas.
Water Quality	• Lined Septic tanks will be provided • Fuels and lubricants will be stored in areas with impervious floors • Proper drainage will be provided to construction camp and construction site.

Dust Emissions	• The most effective means of reducing the dust emission is wet suppression. Watering exposed surfaces and soil with adequate frequency to keep soil moist at all times can reduce the total dust emission from the project by as much as 75% • Dust emission from soil piles and aggregate storage stockpiles will be reduced by covering the piles, for example with tarpaulin or thick plastic sheet. • Good quality (low sulfur) fuel will be used for vehicle and machinery • Provision of dust respirators to equipment operators who are exposed to dust while operating their equipment. • Tree planting on open and disturbed areas which will not be used by the operations.
Noise	• Reduce equipment noise at source by proper design, maintenance and repair of operational machinery and equipment. • Minimize noise from vehicles by use of proper silencers and mufflers. • Use noise-abating devices wherever needed and practicable. • The movement of vehicle should be restricted during nighttime. • Providing workers with noise related PPE's • Planting of trees that could serve as sound buffers. • Hauling trucks shall be operated at low speed to minimize vibration, promote road safety, etc.
Water Quality	• Minimize the land disturbance as much as possible. • Proper storage techniques will be adopted to avoid leakage and to prevent the erosion of soils. • Existing drainage systems will not be altered. • Maintenance and fueling of the vehicles will be done at designated places (not at site)

	• Earthy materials and runoff will be handled in a manner that prevents adding suspended solids to flowing water which will prevent water pollution
Terrestrial Flora	• As such there is not any thick natural vegetation on the project site. So, there is no possibility of vegetation loss. But Proponent has planned a Tree Plantation. • Buffer zones will be provided to the agricultural fields.
Terrestrial Fauna	• Wildlife protection and biodiversity management plan should be enforced in the case of disturbance to the wildlife present in the project area. • Labourers will not be allowed to discard food, plastic etc. which can attract animals/birds near the core site
Health Deterioration	• Occupational Health and Safety SOPs will be enforced • Personal Protective Equipment (PPEs) should be given to the workers • Wearing of the PPEs should be regulated strictly by the concerned authority • Exist route should be demarcated clearly • First aid kits should be present on-site to treat minor injuries • Routine medical check-ups of the labor should be done on the regular basis

	Ambulance and related equipment should be made available immediately in the case of emergency and in the case of the disaster
Safety	- A stop sign will be put up on the access road. - A speed breaker will be constructed on the access road. - The speed limit for the access road will be kept low. - A public safety plan should be developed and displayed. - Community complaints register, and other mean should be adopted for the community to complain. - All entry points into the construction area should be staffed 24 hour a day. People who are not related to the project should not be allowed inside. - No machinery should be left unattended, particularly in the running condition. - Nighttime driving of project vehicles should be limited. - Drivers will be trained to drive slowly following traffic rules.

5. Environmental and Social Monitoring Plan

Environmental Management and Monitoring Plan (EMMP) were developed for effective implementation of the recommended mitigation measures. The EMMP includes check and balance to control and minimize the identified impacts and monitoring programs to oversee residual impacts, if any, during the operational phase. The EMMP describes procedures to be followed throughout the operation of the project. It also identifies the roles and responsibilities of all concerned personnel, including the persons reporting during the different project phases. Mitigations for physical, biological and socio-economic parameters will be measured to determine compliance with standards established in EMMP. The Monitoring Plan will record the inputs provided by various participants in the environmental and social management process. It will also check whether the prescribed national and provincial guidelines and plans are being followed and that the required mitigation measures and activities are being accomplished in time.

6. Monitoring Plans

During operational phase, monitoring is required to be carried out at least once in a month during rainy season to check the soil contamination and surface water level/condition. Moreover, periodic monitoring should also be carried out regarding ambient air quality, noise and dust level and worker safety. A detailed site monitoring plan has been developed and given in Chapter-6 of this EIA Report.

7. Conclusion

The Environmental Impact Assessment contains description of the project, description of the environmental baselines, potential environmental impacts and suggested mitigation measures. An implementation mechanism for mitigation measures in the form of an Environmental Management Plan is included in the study. While the objectives of this study have been to describe the project and its environmental impact, it also identifies adverse environmental factors associated with the project. Appropriate mitigation measures as explained in the environmental study should reduce, if not eliminate, these impacts so that these are within acceptable limits. It is further concluded that all potential environmental concerns associated with the project have been adequately addressed, and no further study is required in this context. The objective of preparation of an environmental study is to identify how the environment is impacted and to suggest mitigating measures to reduce if not totally eliminate adverse effects of a project. It is accordingly recommended that Environmental Approval for the project should be issued by the Punjab Environmental Protection Agency, subject to payment of the requisite scrutiny fee by the proponents of the project. The adverse environmental impacts can be reduced significantly by adopting best management and monitoring practices as well as by implementation EMMP with true spirit.

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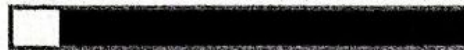
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1.1 General

Currently out of 45 million households in Pakistan, 4.3 million are connected to natural gas network and the rest are relying on LPG and conventional fuels like coal, firewood, kerosene, dung cake etc, which indicate the strong demand for Liquefied Petroleum Gas (LPG) sector.

Liquefied Petroleum Gas (LPG) is used as fuel for cooking and heating in the northern Pakistan particularly in Punjab. It is also used as fuel in vehicles particularly taxi and rickshaws. More than 30,000 rickshaws and taxis in Karachi and other parts of the country are run on LPG. The demand of LPG in Karachi is consistent throughout the year and increases during winters in Punjab and Northern Pakistan.

Although demand of LPG is persistent throughout the year, supply of LPG from producers (or extractors) to distributors and marketing companies has been limited due to maintenance and overhauling shutdowns, which often creates shortages. Besides that, LPG producers are also limited in numbers and LPG marketing companies need to have a quota of gas to be allocated by the producer. This factor makes LPG business vulnerable in the hands of LPG producers.

LPG (Liquefied Petroleum Gas) is the generic name for commercial propane and commercial butane. These are hydrocarbon products produced by the oil and gas industries. Commercial Propane predominantly consists of hydrocarbons containing three carbon atoms, mainly propane (C_3H_8). Commercial Butane predominantly consists of hydrocarbons containing four carbon atoms, mainly n- and iso – butanes (C_4H_{10}). They have the special property of becoming liquid at atmospheric temperature if moderately compressed and reverting to gases when the pressure is sufficiently reduced. Advantage is taken of this property to transport and store these products.

1.1.1 Screening

For the prediction and mitigation of the impacts of development at an early stage, it is prerequisite under the environmental laws of the country to undertake Initial

Environmental Examination (IEE) and Environmental Impact Assessment (EIA). As per the statutory notification of Review of Initial Environmental Examination (IEE) and Environmental Impact Assessment (EIA) Regulations, 2022 made under Section 12 of Punjab Environmental Protection Act, 2012, the project for the Established project of an Auto fuels storage and refilling station occurs under **Schedule II, Category A** (Oil and gas extraction projects including exploration, production, gathering systems, separation and storage).

1.2 Purpose of study

The established project of any Project leads to positive and adverse changes in environmental and change in social settings of the Project Area. The intensity and level of change, however, depends upon the nature of the Project and the baseline environmental conditions of the area. The commencement of a project will cause minor to moderate adverse environmental and social impacts on the surrounding area. Thus, an environmental and social study is mandatory to establish the baseline conditions, evaluate the possible adverse impacts if any, and devise the mitigation measures.

The predominant objectives of this EIA report were:

- To assess and report the prevailing environmental conditions of the project area.
- To develop a baseline in order to evaluate the suitability of the project in particular area.
- To recognize activities during pre-development, development and operation of project and its associated impacts.
- To assist the proponent for planning, designing and implementation of the project, keeping in view the elimination or minimization of negative impacts.
- To develop proper mitigation as well as monitoring plans for the uniform implementation.
- To provide opportunity to the public for a better understanding of the project as well as its impacts on community and environment in context of sustainable development.

- To prepare an EIA report for the submission to Environmental Protection Agency, Punjab for Environmental Approval.

As per PEPA 2012 and the IEE/EIA Regulations, 2022 it is mandatory for the proponent of any development project to accord Environmental Approval from EPA Punjab by filing an IEE or EIA as the case may be, before the Agency. The said project is established to meet the petroleum requirements of customers. This Report presents the Environmental Impact Assessment (EIA) for this established project. For this purpose, the proponent has decided to engage environmental consultants, **M/S EnvironTech Consultants**. The purpose of this study is to identify the environmental baseline i.e. physical, biological and socio-economic/cultural conditions and assess all possible impacts arising during the construction and operation phase of the project with the aim to find out appropriate measures for their mitigation, to either eliminate those impacts or to bring them to acceptable level and formulate Environmental Management Plan (EMP) for implementation of the project in environment-friendly manner.

The report provides relevant information, as required under the officially approved format, to help the decision makers i.e. EPA Punjab before issuing for the Environmental Approval.

1.3 The Proponent

Name: Farhan Mumtaz S/O Mumtaz Hussain.

Address: R/O : House no. 412, Block 5, Muhalla Sector D-11, Green Town, Lahore.

1.4 Details of Consultant

The services of environmental consultant M/s **EnvironTech Consultants** have been taken by the proponent for the formulation of Environmental Impact Assessment (EIA) Report. EnvironTech Consultants (PVT) Ltd is an environmental consultancy firm that has an unrivalled reputation for providing high quality tailored services. EnvironTech Consultants (PVT) Ltd is a dynamic, responsive and innovative in providing these cost-effective solutions. EnvironTech Consultants (PVT) Ltd limited comprising of

Environmental Engineers & Consultants and rendering their services to clients in both industrial and the government sectors.

With the visionary leadership of its veteran management and enthusiasm of its team, it is committed to come up with innovative ways of maintaining and enriching the Environmental Profiles / Portfolios of its prestigious clients with activities having a strong and lasting impact to their corporate image. It has attracted and retained staff with an unrivalled depth and breadth of expertise and experience that they have from working, not just in consultancy but also in commercial, industrial and regulatory environments. With its pool of Environmental Consultants, Environmental Scientists and Environmental Engineers, company offers one stop solutions tailored to its client's needs.

Contact Details:

Focal Person	Kamal Ahmed Cheema
Address	Office #11, 2 nd Floor, Center Point Plaza, Lahore
Contact No.	0303-4342302

1.4.1 Team Members

Qualified professionals with relevant experiences of conducting environmental assessment have contributed to the preparation of Environmental Impact Assessment (EIA) Report. The List of team members has been attached as an Annexure-VI along with their roles and responsibilities:

1.5 Brief Description of Nature, Size, And Location of Project

The Project is titled as of M/S Pyramid Gas Pvt. Ltd. For established LPG storage & Filling Plant. Its salient features have been described later in this Chapter, Chapter 2 and briefly in Executive Summary of this EIA Report.

1.5.1 Nature of Project

This project is of LPG Storage & Filling Plant.

1.5.2 Size of Project

The Project is having Storage capacity of 2240 Water Liters.

1.5.3 Location of Project

The present project is located at Mouza Jevan Pura Kalan, Bagum Kot on Sheikhupura/Faisalabad Road, Tehsil and District Sheikhupura..

1.5.4 Area of Project

Total area of the Project is 24,651 SFT.



Figure 1: Location of Project

2.1 Screening/Type and Category of Project

According to the Section 12 of Punjab Environmental Protection Act, 1997 (amended

2012) which states;

"No proponent of a project shall commence construction or operation unless he has filed with

the Government Agency designated by Federal Environmental Protection Agency or Provincial

Environmental Protection Agencies, as the case may be or where the project is likely to cause an adverse environmental effect an Environmental Impact Assessment (EIA) and has obtained

from the Government Agency approval in respect thereof."

As per Punjab Environmental Protection Act 1997 (amended 2022) and Environmental Impact Assessment (EIA) & Environmental Impact Assessment (EIA) Regulations, 2022 proposed project falls under **Schedule II, Category A** (Oil and gas extraction projects including exploration, production, gathering systems, separation and storage).

2.2 EIA process

2.2.1 Overview of EIA

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

2.2.2 Objectives

The overall objective of the EIA is as follows:

- Description of the proposed project, including an estimate of emissions, effluent and waste and consideration of the project alternatives;

- Identify and investigate all impacts of the proposed project on the physical, biological, and socio- economic environment;
- Evaluation of the baseline environmental conditions in the impact zone to provide a basis for assessing the incremental impacts of the proposed project, including existing pollution levels and nuisance conditions;
- Identification and assessment of the potential impacts on the environment during each of the project phases;
- To propose mitigation measures that would help the Project Proponent in conducting the operation in an environmental sustainable manner; and
- To develop an Environmental Management Plan that would assist the Project Proponent in the effective implementation of the recommendations of the EIA

2.3 Scoping of EIA

This consolidated EIA report covers the examination of physical, biological, environmental and socioeconomic impacts of the proposed project. The spatial and temporal scope of the project is described below:

2.3.1 Spatial Scope

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

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

2.3.2 Temporal Scope

Effects on socioeconomic receptors and resources have been assessed for the construction and operational phases of the proposed project. The proposed project activities are predicted to last for a period of 8-12 months within which the potential impacts have been assessed. The operational impacts have been assessed for the entire lifespan of the facility.

2.3.3 EIA methodology

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

2.3.4 Scoping

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

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

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

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

The scoping was followed by data collection describes in subsequent section

2.3.5 Data Collection

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

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

2.3.6 Baseline

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

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

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

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

2.3.7 Evaluation of alternatives

To establish an environmentally sound preferred option for achieving the objectives of the proposed project, different alternatives including site selection alternatives were studied in collaboration with the project proponent.

2.3.8 Stakeholder consultation

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

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

2.3.9 Impact assessment and mitigation

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

- Physical environment of the area
- Biological environment of the area

- Socio-economic environment of the area

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

Reversibility of the impact	condition. Irreversible: When a receptor does not or cannot resume its pre-project condition.
Significance of the impact	Major, Moderate, Minor, Negligible and Beneficial Based on the consequence, likelihood, reversibility, geographical extent, duration, level of public concern and conformance with legislative or statutory requirements.
Consequence severity of impact	High: ▪ Serious/catastrophic damage to environment ▪ Direct legislative requirement ▪ Corporate requirement ▪ Serious threat to corporate reputation/profitability/ability to do business. Medium: ▪ Measurable damage to the environment ▪ Subject to potential future legislation ▪ Potential to affect reputation/cost ▪ Implication/reduced efficiency Low: ▪ Negligible damage to the environment No risk to business

2.3.10 *Important issues and concerns raised during consultation*

During consultation it was observed that maximum of people was in favor of project and following issues and concerns were raised. Stakeholder Consultation it is mentioned in detail in Chapter 8.

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

- Monitoring should be done regularly to check efficiency of treatment plant and to comply with PEQS.
- Solid waste should be managed effectively by adopting the standard practices of the area.
- Cleanliness of the area should be ensured.
- An effective EMMP should be designed and enforced with true spirit.
- Health of the workers should be ensured.

4.3 Significant impacts and factors to be determined

Main impacts and factors to be determined are:

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



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

3.1 Screening/Type and Category of Project

Section 12 of Punjab Environmental Protection Act says that no proponent of a project shall commence/ undertake construction or operation of any sort unless they had filed with the Provincial Agency an Initial Environmental Examination (IEE) and an Environmental Impact Assessment (EIA), where the project is likely to cause an adverse environmental effect. The Proponent has to secure approval from the Provincial Agency in respect thereof. Punjab Environmental Protection Act provided the guidelines for categorizing the projects. As per Review of Initial Environmental Examination (IEE) and Environmental Impact Assessment (EIA) Regulations, 2022 the Established project falls in the **Schedule II, Category A** (Oil and gas extraction projects including exploration, production, gathering systems, separation and storage)".

The existing project is the established LPG Storage and filling plant. Total cost of the project 45 Million.

3.2 Objectives of Project

Present Project has following objectives.

- i. It is expected to benefit local population.
- ii. To provide job opportunities to local public and to improve their living standards
- iii. To improve the economic activities
- iv. Maintain continuity in supply of LPG gas to the consumers through distributors and quality of services to the consumers.
- v. Private investment will be beneficial for the national economy and GDP as well.
- vi. Ease in availability of filled LPG during crisis period.

- vii. Help to overcome the scarcity of bulk LPG due to huge gap between demand and supply.
- viii. Help to overcome the scarcity of bulk LPG due to huge gap between demand and supply.

3.3 Alternatives

The details of the site alternatives and technology alternatives are discussed below:

3.3.1 Technology Alternative

LPG is well positioned to assist developing countries in the transition to modern fuels for the following reasons:

1. Availability: There is nothing exotic to invent or improve. The transportation system that moves it is in place, the tank to store it is available, and the appliances and equipment that provide heat and power are "on the shelf".
2. Infinite shelf Life: LPG does not deteriorate over time unlike some other liquid fuels that gel, stratify or evaporate and must be protected from weather to prevent deterioration.
3. High energy density: Compared to traditional fuels in terms of weight equivalency, LPG has ten times energy.
4. Environment friendly: It burns cleanly without smoke or residual ash, thus avoiding the health hazards associated with indoor use of traditional fuels in the event of a leak, LPG doesn't contaminate the soil or aquifers.
5. LPG can be transported, stored, and used virtually anywhere in the world. It does not require a fixed network and does not deteriorate over time.
6. LPG is very clean burning and has lower greenhouse gas emissions than any other fossil fuel when measured on a total fuel cycle.
7. LPG is cost-effective, since a high proportion of its energy content is converted into heat. LPG can be up to five times more efficient than traditional fuels, resulting in less energy wastage and better use of energy resources.

LPG has many technology advantages over other fuels, it is a cheaper and green fuel hence any other fuel project couldn't be considered.

3.3.2 Site Alternatives

No site alternative is considered for the abovementioned project as the site is already established for (M/S Pyramid Gas Pvt. Ltd.). The selected site is undisputed, and it is under the lease of proponent by Havelet Gas Pvt. Ltd. that recently owned CNG filling Station from Maverik Pvt. Ltd. The site is most feasible in context of social and environment position as well as in achieving the intended objectives. The selected site also houses no ecologically sensitive area within a safe radius. It is best suited for the project.

Moreover, the **site considered suitable** because of the following features:

- The site observed to be almost level in topography.
- No endangered fauna/flora has been observed near the project.
- The site does not fall in any category of protected or environmentally sensitive area.

The location of project is best suited for continual of the activities. So, no alternative for site is analyzed.

3.4 Location and Layout of Project

The location of the established project of M/S Pyramid Gas Pvt. Ltd. is at Mouza Jevan Pura Kalan, Bagum Kot on Sheikhpura/Faisalabad Road, Tehsil and District Sheikhpura. The geographical location of the constructed LPG station area is 31°40'57.2"N 73°57'56.6"E

The elevation of the project area is 758ft from the sea level. The total demarcated project area is given below:



Figure 2: Project Area

The surface land in and around the project area is leveled and Self-developed commercial. No ecology sensitive receptor such as; forest or reserved area is present within **3 km** vicinity that could be impacted due to the established project of this project.

3.5 Land Use on Site

Self-developed Commercial land that is used for the constructed project.

3.6 Road Access

The project is well connected to road network i.e., **Sheikhupura- Faisalabad Road**. The road network is shown below in Figure.



M/S Pyramid Gas Pvt. Ltd
Sheikhupura

Figure 3: Road Access Plan

3.7 Vegetative Features

The area around the project area is Self-developed commercial. There are no such vegetative features in or around the area include except some self-growing trees of kikar and wild grass.

Table 2: Vegetative Features of the Project Area

Sr.#	Local Name	Type	Biological Name
1	Kikar	Throne Tree	<i>Prosopis juliflora</i>
2	Wild Grasses	Grass	--

3.8 Cost and Magnitude of Operation

The major raw material for the plant is LPG which will be used and transported in tankers to the plant, maintaining safety standards. Total cost of established project is 45 million PKR with total storage capacity of 2240 water liters. Furthermore, Total Project cost coverage involved NOCs obtaining cost, construction cost, cost of storage tanks, PPEs, safety equipment's and purchase of LPG.

Table 3: Cost Breakup

S#	Kinds of Cost	Amount in Million
	Land Cost	6.2
	Obtaining NOCs from OGRA and other departments	1
	Installation of Equipment/Machinery	16.6
	Land Development, Infrastructure & Construction Cost	19.2
	Environmental Budget	2 million
	Total Cost	45 million

Table 4: Breakup of Environmental Budget

Environmental Budget: 2 million	
Construction	
Ambient air monitoring	50,000/-
Noise monitoring	10,000/-
Water quality monitoring	40,000/-
Health & safety	1,00,000/-
Worker's training	1,00,000/-
Operation	
Environmental Monitoring (Ambient Air, Noise)	50,000/-
Solid waste management	30,000/-
Wastewater management	50,000/-
Plantation/green belt development	70,000/-

3.9 Schedule of implementation

The project of M/S Pyramid Gas Pvt. Ltd. is already constructed. The operation of the plant further will be carried out in accordance to the following phases, mentioned below;

Operational phase

This phase includes:

- Implementation of fire safety, emergency evacuation plans
- Security management
- Finishing of amenities
- Availability for buying and rental purpose

3.10 Project Description

3.9.1 Raw Materials

The major raw material for the plant is LPG which will be transported in tankers to the plant, maintaining safety standards. The LPG will get imported / local through Karachi port and will be brought through bowzers.

3.9.2 Final Product

Filling the LPG in Vehicles.

3.9.3 Capacity

The project constructed for storage and filling station which has a LPG Capacity of 5 M.Tons.

Specifications of cylinder

- Volume: 5000 L
- Design Pressure: 1.77 (MPa)
- Tank Size (Diameter x length x Thickness mm)
- 1200x4000x10
- Outer Size [Dia x H/L (mm)]
- 1220x1650x4794
- Material
- Stainless Steel

3.9.4 Plant Utilities and Machinery

- ✚ LPG Storage Tank
- ✚ Decanting Pumps & Transfer pumps
- ✚ Pipes with structural steel support
- ✚ Ball Valve
- ✚ Cylinders
- ✚ Firefighting system
- ✚ Water sprinkler systems
- ✚ Evacuation system

- ✚ Pressure differential valve
- ✚ Pop action relief
- ✚ Non-return valve

3.10 Fire Copping System

SR.NO	DESCRIPTION	QTY.
01	Emergency shut down valve	03
02	Fire hydrant	04
03	Fire monitor	06
04	Fire water pump 750 GPM	01
05	Showering pump 500 GPM	01
06	Jockey pump	01
07	Manual sprinkler	225
08	Auto sprinkler	180
09	Fire extinguisher DCP 09 KG	08
10	Trolly mounted 50 KG DCP Fire Extinguisher	03
11	Fire extinguisher CO ₂ 3 KG	02
12	Filling machine	06
13	Earth PITS	18
14	Sand bucket stand	04
15	Fire alarm	01

3.11 PROCESS DESCRIPTION

LPG will get transported through bowsters to the storage and filling plant where LPG will get stored in tanks and filled into vehicle. Transfer operation of LPG is very critical, as LPG is a highly inflammable product and the systems are required to be intrinsically safe. The systems also require very comprehensive fire safety arrangements.

3.11.1 Filling of Storage Tanks

LPG tankers will arrive on site and enter through main gate of plant. Tanker will be attached to the bowser point and LPG will be transferred from Mobile tanker to storage tank.

3.11.2 Transfer of LPG to Filling Station

Single pump is used to transfer LPG from storage tank to transfer station via transfer pipes. Transfer pipes are provided with fire water lines in case of emergency fires.

3.11.3 Visual Inspection / Segregation of Cylinders

Cylinders found unfit for filling on visual inspection e.g., heavily rusted or heavily dented will be separated during visual inspection. Cylinders having twisted valve spindle, broken/bent foot protection ring would also be segregated.

3.11.4 Vehicle Filling

Valve protection cap will be removed, and Vehicle is filled at filling station.

3.11.5 Final Inspection

Cylinders are visually inspected to examine their sound condition and presence of valve protection.

3.12 SUPPLIES

3.12.1 Water Supply

Water will be extracted from underground water sources. The management will install Motor pump for extraction of ground water for both water storage tank and other purposes. The ground water will be pumped from 100-120ft. The total water requirement will be 200 gallons per day.

$$\text{Wastewater Generation Rate} = 0.74\text{m}^3/\text{day}$$

$$\text{Detention Time (T}_d\text{)} = 2.5 \text{ hours}$$

$$\text{Volume (V)} = 0.07 \text{ m}^3$$

$$\text{Depth (D)} = 3\text{m}$$

$$\text{Area (A)} = 0.02 \text{ m}^2$$

Diameter (d) = 0.15m

3.12.2 Fire-Fighting System & Emergency Response Plan

Emergency Response & Evacuation Plan is designed to respond an emergency arises (medical, fire, disasters etc.) and provide a process for continuous medical support and evacuating people from danger, protect assets, property and to restore operations to normal as quickly as possible. Their objective is to provide a safe and healthy environment for employees, contractors, visitors, and guests.

In the event of an emergency, the Emergency Response Team (ERT) will respond immediately to take appropriate actions. Frequent drills/training will be conducted to ensure that they react in an organized manner.

3.12.3 Electricity

Source of power will be WAPDA only.

3.12.4 Manpower

A total of 5-10 employees including mechanically, electrical, machine operators, sweepers and other managerial and office staff shall be working here.

3.12.5 Health, Safety & Hygiene

Health, Safety & Hygiene includes the following:

3.12.6 First Aid facility

At workplace workers and employers should have enough information, knowledge and training regarding first aid treatment in case of any emergency. The subject project will provide proper medical facilities to workers and staff to cope with any incidental accidents and proper training about first aid will be provided to workers and staff.

3.12.7 Safety Trainings

Workers and all the staff will be provided with proper training about the work and safety practices.

3.12.8 Use of Drugs and Narcotics

Drugs and narcotics are strictly prohibited during working hours in working area. Smoking will be only allowed in rest timings at properly isolated places.

3.13 Leakage Detection System:

Gas detectors equipped with alarms will be used to detect any leakages in the unit. This will help in early response in case of emergencies. The design of gas detectors is given below:

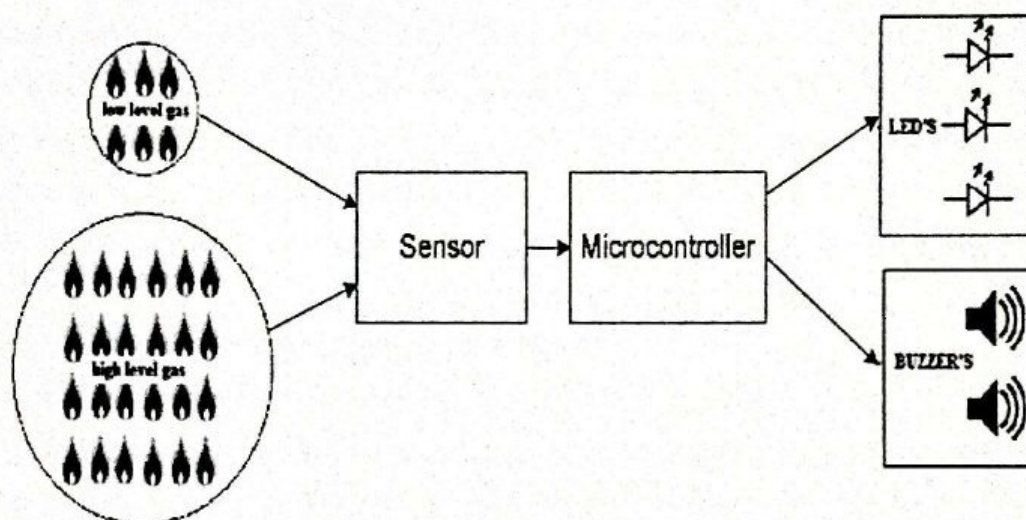


Figure 4: Design of Gas Detectors

Mitigation Measures for accidental leakage

- If a gas leak is detected, the valve of the main gas pipe can be closed immediately to stop the flow of gas.
- Identifying the specific portion of the tank or tank system that has caused a subsurface release is a critical first step
- The site's emergency shutdown, shall be exhibited which triggered the sirens, cut electricity supply (except for lighting), closed the spherical container valves as well as inlet valves
- Fire hydrants will be made available. Removing flammable or explosive materials from the release area.
- contact to qualified professionals who will be able to provide quick assistance to help reduce costs and liability

3.14 Personal Protective Equipment

To control any health and safety risk and to reduce the magnitude of any adverse impact, we have to devise control strategies and adopt them in the following category order:

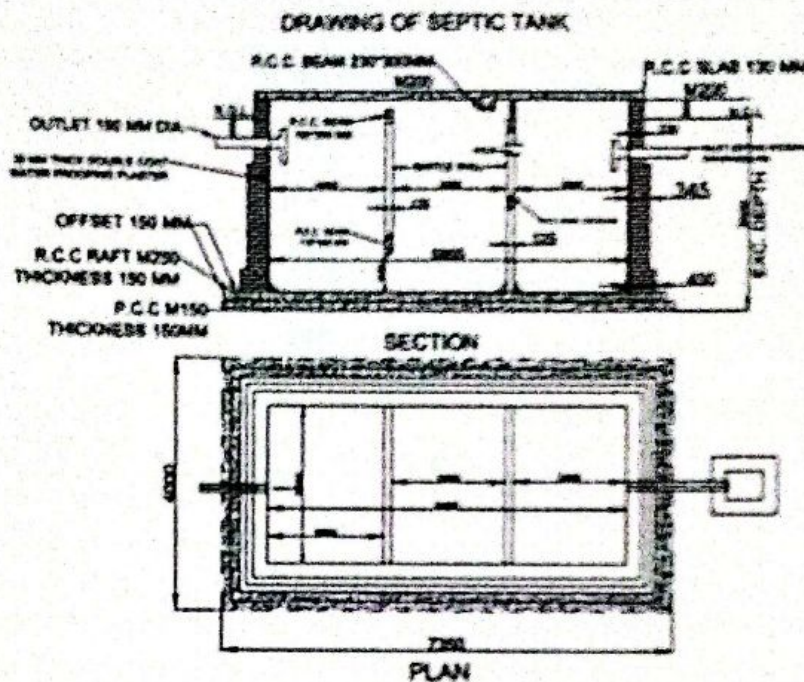
- ✚ Control at source
- ✚ Propagation Control
- ✚ Control at receiver end

Of these three, the first two are of prime importance but the last one should always be for every risk at every workplace; standardized according to the working conditions and the people employed in the job. The first two effectively mitigate the risks and impacts but the third one compensates the left over and unavoidable losses by protecting the receiver and keeping it to a tolerable exposure level for that impact/risk. For this purpose, the equipment provided are termed as 'Personal Protective Equipment'. Following PPEs will be provided in project

- ✚ Safety Helmet
- ✚ Safety Shoes
- ✚ Safety Masks
- ✚ Safety Jackets

3.15 Wastewater Source and Treatment

Effluent arising from domestic activities will be treated in septic tanks and then will be released into soakage pit, to address the water depletion issue. LPG storage and filling activities give rise to no waste effluent hence wastewater treatment system is not required. The detailed design of septic tank is given below:



3.16 Air Emissions Source and Treatment

No Air emissions are expected during process. In case of leakage, broken down pipes, LPG could escape which will have certain impacts on workers. For this, Gas detectors will be provided. Further PPEs will also be provided to workers. PM from floor cleaning is also insignificant as wet suppression will suppress the dust emissions.

3.17 Noise Source and Treatment

During operation, heavy transportation will be the cause of noise. Proper tuning of vehicles will mitigate this problem. Moreover, Tree Plantation along the boundary of Established Project and Plantation within the unit will further reduce noise since plants and trees serve as noise absorbers.

3.18 Solid Waste Source and Treatment

Solid waste will be municipal in nature and will be handled by solid waste management contractor as per TMA practices.

3.19 Relocation and Rehabilitation Plans

No human population resides within project area as the land is owned by the proponent. The nearest populated area is approximately 5210 m (Ajwa City Housing Society) away from the aforesaid project location. No structure of any significance

(cultural, religious, archaeological, recreational or any other) stands on the land selected for the project requiring dismantling or relocation. No flora or fauna; especially belonging to endangered species is found within a safe distance from the site which will be removed or moved to some other part. Hence, no relocation and resettlement is required.

The land leased documents showed that land is leased by Proponent from Havelent Gas Pvt. Ltd. that is recently owned CNG filling station from Maverik Pvt. Ltd that was the previous owner, for reference the land leased agreement is attached as Annexure of this EIA Report. Moreover, there is no dispute and rehabilitation associated with the established project of LPG Storage & Auto Filling Plant of "**M/S Pyramid Gas Pvt. Ltd.**".

Till the date proponent have no other plans to switch his business or site and in coming years upon decommissioning of the established project, rehabilitation of the project site will be carried out to restore the site to its original status or to a better state than it was originally.

This will include replacement of topsoil, refilling of bowser's excavated area and re-vegetation which will lead to improved visual quality of the area.

3.20 Land lease Documents

Land lease documents have been attached as Annexure of this EIA Report, which clearly shows that the selected area for the established project of M/S Pyramid Gas Pvt. Ltd. is under the lease agreement of proponent with the new owner (Havelet Gas Pvt. Ltd) of the filling station.

3.21 Government Approvals

They have applied for environmental approval from EPA Punjab.

This chapter provides baseline data (physical, biological and socio-economic parameters) related to the project and study area. The information has been compiled by using primary and secondary data resources. This chapter also refers to the theoretical analysis of the methodology adopted for collection of baseline data. The underlying principles and practices adopted in this regard are also discussed.

4.2 Methodology

The methodology employed to collect the baseline data and information regarding the social structure and various related parameters as discussed in sub-sections below:

4.1.1 Data Collection

The primary data was collected by visiting the project area and its communities in its nearby vicinity. The secondary data regarding physical parameters (topography, geology, seismology, and climate) was obtained by visiting relevant various government departments and their official websites. The biological parameters such as flora and fauna were studied by preparing a floristic list based on visual observation and fauna was studied by using opportunistic approach. The species were recorded with reference to their existence in the project area. Information on wildlife fauna species (mammals, amphibians, reptiles, birds, etc.) in the assessment area was compiled based on opportunistic observation, gathering the existing information and consultation with local experts, community members and government and Non-Government Organizations (NGOs). The socioeconomic aspects were studied and analyzed by studying detailed village profile and by conducting household surveys.

4.1.2 Social Survey

The purpose of social survey was to record the present condition of the people living in the project area and to assess the expected project impacts on their life, subsistence systems and socio-cultural conditions. Prior to conducting the field surveys, the following steps were taken:

- Clear boundaries of the project area were identified
- Decided the sampling procedure in order to draw a representative sample size of the target population and households

- Developed the tools for data collection i.e. questionnaires to access the socio-economic status of the area

4.1.3 Sampling Design

Social baseline data of the persons residing in the study area has been estimated and collected through random sampling by using pre-developed questionnaires.

4.1.4 Questionnaires

In order to test the validity and reliability of the established questionnaires, they were reviewed to assess whether questions needed to be clarified, changed or re-sequenced and then a final editing of questionnaires was conducted prior to their application in the project area. The sample of socio-economic questionnaires used is attached as Annexure.

4.1.5 Data Editing and Analysis

The filled questionnaires and recorded information were compiled by the same field investigators who were involved in the data collection. This was done immediately after completing the field investigations. Data sets were processed. Analysis of the data and preparation of conclusions in the minimum possible time was done using statistical techniques of data analysis.

4.3 Review of Legal and Administrative Framework

The objective of reviewing legal and administrative framework is to obtain information on all legislation pertaining project development. The Socio-Environment Team of Central Environment Services reviewed the environmental policies, national, international and provincial laws and guidelines relevant to the development of project which helped in systematic identification of impacts.

4.4 Baseline Conditions

This chapter provides baseline data (physical, biological and socio-economic parameters) related to the project and study area

4.5 Physical Environment

Pakistan Can be divided into five broad physiographical regions. These are the mountainous regions of the north, the western highlands and plateaus, the sub-

mountains Indus region, the Potohar Plateau, Salt Range, and the Indus Plain. Brief description of these regions is given below:

Region	Characteristics	Location	Height
Northern Mountainous	Hindu Kush Karakoram and Himalayan Mountain Ranges	Northern Part of KPK, Gilgit Agency, Northern Areas and Kashmir.	Rises above 8,000m
Western Highlands and Plateaus	Toba Kakar, Sulaiman, Central Baruhi, Saihan, Central Makran, Makran Coastal and Kirthar Ranges	Mainly in Baluchistan, also parts of Sindh and KPK	Between 1,200 to 3,000 m
Sub-Mountains Indus	Alluvial filled Basins	Plains of Peshawar Kohat and Bannu	Less than 1,000 m
Potohar Plateau and Salt Range	Flat to gently undulating surface, broken by gullies,	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

4.4.1 Topography

Sheikhupura the city of Punjab province, eastern Pakistan. In the town center stands a fort of the Mughal emperor Jahangir (completed 1619) that also served as the 19th-century residence of one of Ranjit Singh's queens; outside the city, the massive Hiran Minar tower overlooks the countryside. Sheikhupura is connected by road and rail with Lahore (25 miles [40 km] southeast) and various other cities. It is an industrial center that makes food products and textiles. The city is in a section of alluvial plain known as the Bar tract, which is irrigated by the Chenab Canal system.

Sheikhupura is an industrial city in the northwest of Punjab province, Pakistan. The city is also the administrative headquarter of the Sheikhupura district and is approximately 38 km from Punjab's provincial capital, Lahore. The town is famous for

its historical monuments and also known as the city of Mughals, where emperors come for hunting. The city is also well-known for its booming industry. District Sheikhupura is bounded on the North by Gujranwala and Hafizabad districts, on the North-East by Narowal district, on the West and South-West by Nankana Sahib District, on the East by Lahore district

Project Site:

The established project site is located in District Sheikhupura

4.4.2 Hydrology

Groundwater from depth of 100 ft can be used for drinking and other purpose. Groundwater is one of the major source of water in the study area, which is extracted with the help of pumps and motors. The groundwater extracted is used to fulfill various domestic, irrigation and industrial needs. Ground water quality report of area is annexed. No surface water body is present within 5 km radius of the project site.

4.4.3 Seismicity

According to Seismic Zoning of Pakistan, the project area in Sheikhupura, lies in Zone 2A and represents minor to moderate damage due to earthquakes.

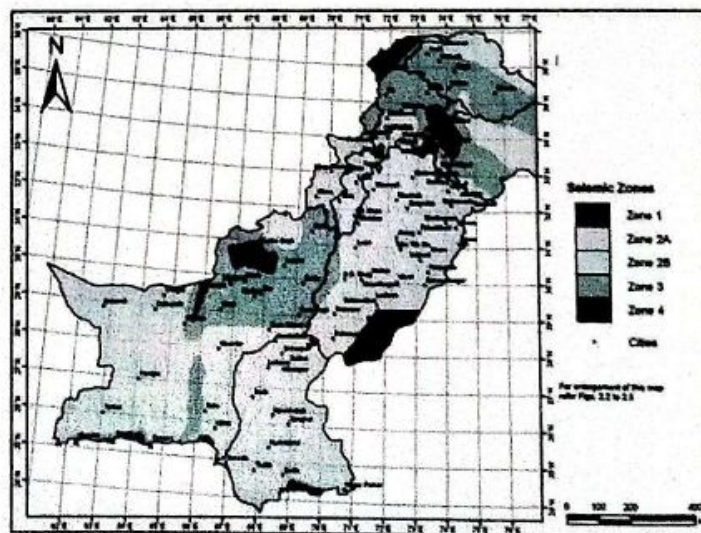


Figure 5: Seismic Zoning Map of Pakistan

4.4.4 Geography

Sheikhupura is situated at a distance of about 36 Km from Lahore, the provincial headquarters. Sheikhupura lies 31°42'51.16"N latitude and 73°59'3.49"E longitude. The city is well connected with its surrounding big urban centres like Faisalabad 94 Km, Sargodha 143 Km and Gujranwala 54 Km. Sheikhupura is also a railway junction. Trains coming from Lahore take these routes for Faisalabad and Shorkot. Sheikhupura City is connected with Faisalabad through newly constructed road Lahore Faisalabad Road project and also connected Faisalabad by M2 and M3 Motorway Hiran Minar, a place of archaeological and historical growth, is situated about 5 kilometres from city.

4.4.5 Climate

Due to its high evaporation rate, Sheikhupura features hot desert-like climatic conditions according to Koppen-Geiger classification. The climate of the district can see extremes, with a summer maximum temperature 44°C and a winter temperature of 4.0°C. The mean maximum and minimum temperature in summer are 43.5°C and 18.0°C respectively. In winter it peaks at around 19.4°C and 4.1°C respectively. The summer season starts from April and continues till October. May, June and July are the hottest months. The winter season starts from November and continues till March. December, January and February are the coldest months. "The bulk of monsoon precipitation occurs in July and August, with monthly averages of 115.0 mm and 89.8 mm respectively. Minimum rainfall occurs in the month of November which is 3.0 mm" (PMD).

Precipitation is the lowest in November, with an average of 3 mm. The greatest amount of precipitation occurs in July, with an average of 1150 mm.

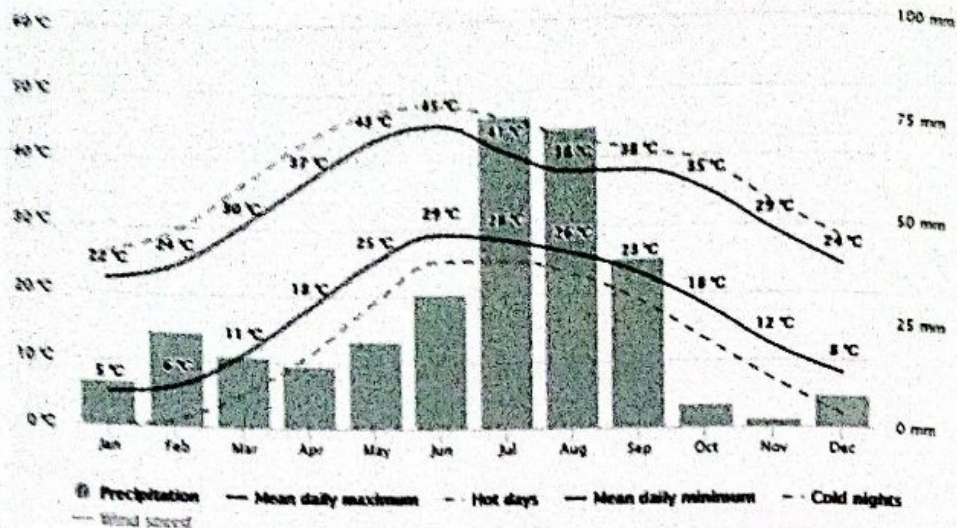


Figure 6: Average Annual Temperatures and precipitation in Sheikhpura

The "mean daily maximum" (solid red line) shows the maximum temperature of an average day for every month for Sheikhpura. Likewise, "mean daily minimum" (solid blue line) shows the average minimum temperature. Weather in Sheikhpura is influenced by Subtropical Dry Semiarid Steppe climate. Low-latitude dry climate. Evaporation exceeds precipitation on average but is less than potential evaporation.

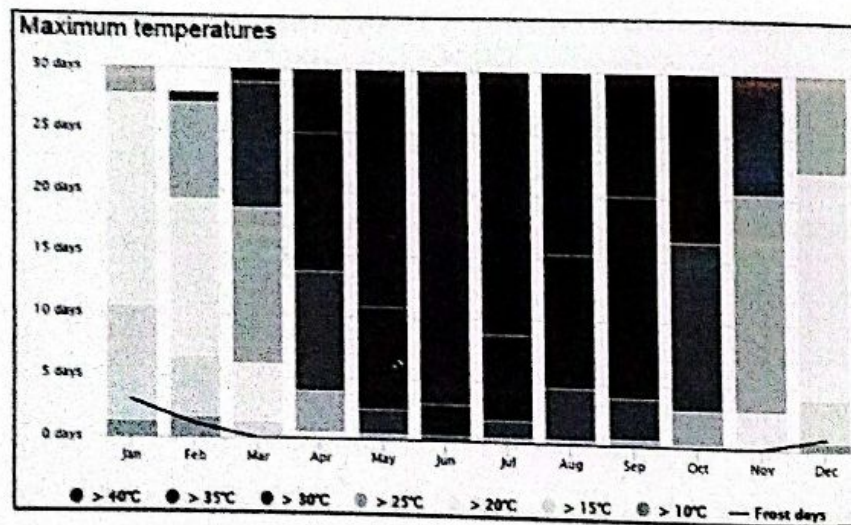


Figure 7: Maximum temperature ranges in Sheikhpura

The graph shows the monthly number of sunny, partly cloudy, overcast and precipitation days. Days with less than 20% cloud cover are considered as sunny, with 20-80% cloud cover as partly cloudy and with more than 80% as overcast.

Precipitation amounts

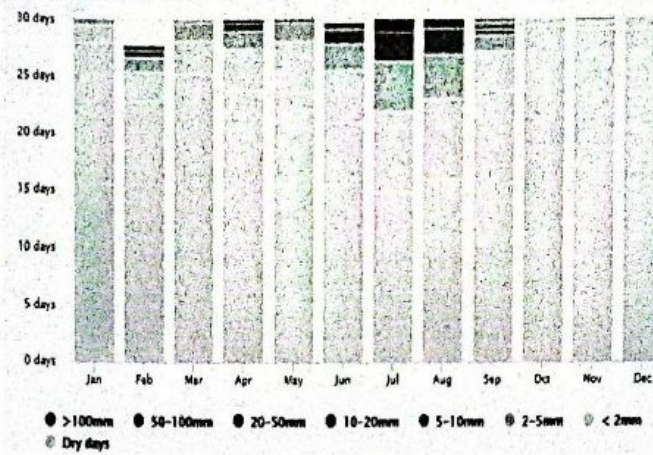


Figure 8: Annual Precipitation amounts in Sheikhpura

4.4.6 Wind

The diagram for Sheikhpura shows the Max and Average Wind speed and Wind Gust.

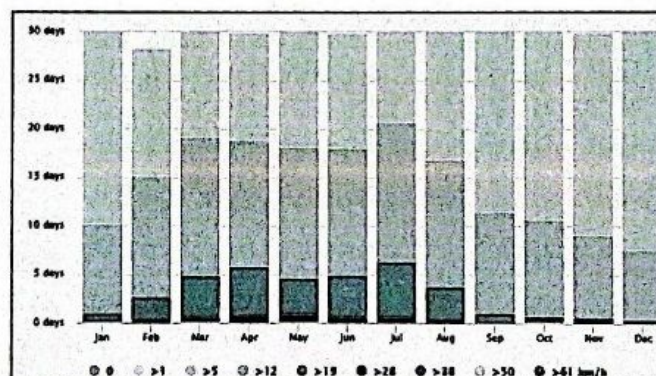


Figure 9: Annual average wind speed in Sheikhpura
(<https://www.worldweatheronline.com>)

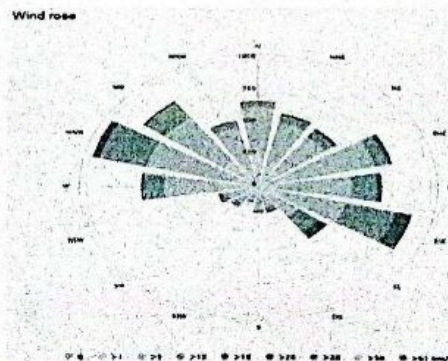


Figure 10: Wind Rose diagram of Sheikhpura

The wind rose for Sheikhpura shows how many hours per year the wind blows from the indicated direction. Example SW: Wind is blowing from South-West (SW) to North-East (NE).

4.5 Ecological Environment

Sheikhpura is enriched with the presence of natural flora and fauna, although with the growing population and development activities, the presence of some has been somewhat affected. They are discussed in detail below

4.5.1 Aquatic Flora & Fauna

No aquatic ecosystem (i.e. canal, stream, river or pond) observed within or around the study area, which omits the possibility of any kind of aquatic species that may be harmed due to the established project of established project.

4.5.2 Flora

No threatened or endangered species and medicinal plants are present in the project area. No vegetation or plants will be removed due to commencement of project. However proper tree plantation and green belts are planned by the proponent. Greenery and trees are present in surroundings of site too. The dominant tree species in study area include; Eucalyptus, Neem, and Kikar. The crops present around project site include wheat, sugarcane and common grass. The nomenclature including common, English, local and botanical names of the flora found in the study area are presented in Table

Table 5: Flora of the Study Site

Sl.	Common Name	Scientific Name
1	Neem	<i>Azadirachta indica</i>

2	Kikar	<i>Vachellia nilotica</i>
3	Safeda	<i>Eucalyptus globulus</i>

4.5.3 Fauna

For study of fauna in the project area, field guides and books were consulted. On the other hand, field observations were conducted along with the interviews of local community members about the fauna of the area. The equipment used in field included cameras, binoculars and GPS device (wherever required). It is important to note that there is a number of factors which can change the findings of such survey. It may be pointed out that the pattern of seasonal migration of small birds varies depending upon each specie. During the construction activity in project area, no important biological feature will be damaged or disturbed as the project falls in industrial area.

The fauna commonly found in District Sheikhpura includes; Hares, Falcon, Eagle, Quail, Starling, Jungle Pigeon, Russian Sparrow, Doves, King Fisher, Parrot, Crow and Local Sparrow.

Commonly found mammals in the area Squirrel are also found in the District Sheikhpura.

The commonly found bird's species include; House Sparrow, Crow and some of them are mentioned below with scientific names.

Table 6: Birds in Study Area

1	House Sparrow	<i>Passer domesticus</i>
2	House Crow	<i>Corvus splenders</i>

3	Pigeon	<i>Columbidae</i>
4	Bulbul	<i>Pycno notidae</i>
5	Teetar	<i>Francolinus francolinus</i>
6	Parrot	<i>Psittaci forms</i>
7	Titodi	<i>Vanellus indicus</i>

In District Sheikhpura reptiles such as Snakes (Cobra and Kraits), Spiny Tailed Lizard and Fringed Toed Lizard are common in the tract, but cases of snake bites are very rare, as these reptiles have been either killed by expanding urbanization or they have moved away.

The amphibians commonly seen around the project area, especially during the rainy season includes. A large number of insects are present due to open fields in the project site. Few of these insects are known to cause diseases in local population. Following is a list of commonly observed insects at the site:

Table 7: Insects in Study Area

S#	Common Name	Scientific Name
1	Black Ants	<i>Paratracheaiognicornis</i>
2	Dragon Fly	<i>Dragon Fly</i>
3	House Flies	<i>Musca domestica</i>
4	Butter Flies	<i>Parnassiusbalucha</i>
5	Honey Bees	<i>Apis mellifera</i>
6	Wasps	<i>Anagyrus pseudococci</i>

7	Grasshopper	<i>Melanoplus differentialis</i>
8	Mosquito	<i>Anophlese sp.</i>

No endangered species are found at the site. The area has not been identified as ecologically sensitive area by wildlife department.

4.5.4 Ambient Air Quality

Ambient air quality monitoring was carried out on the project site. The Impinges Method and Drager Miniwarn, Germany manufactured ambient air quality monitoring equipment was used. Monitoring carried out for Sulfur dioxide (SO₂), Nitrogen oxides (NO_x, NO and NO₂) and Carbon monoxide (CO).

The degradation of air quality in all the large cities is a major environmental concern these days. Air pollution levels in urban centers have either crossed safe limits given in the PEQS or have reached the threshold values.

About 60 to 200 % of the deterioration in the air quality is due to the vehicular emissions. The parameters which have proved to be the major threat are particulate matter and concentration of oxides of nitrogen that are relatively higher in all the large cities of Punjab.

Atmospheric pollution particularly in urban area has a strong impact upon daily life. Sheikhpura is the main city of Pakistan. Its economic growth, industrial progression & transport have risen to grounds responsible for growing energy consumption leading ultimately to the consequences of increase in air pollution. The main sources of air pollution are exhaust from motor vehicles and industries. The main exhaust gases include SO₂, NO₂, CO, etc. Particulate Matter (PM) and noise which are inspected as the pollution indicators.

It was observed during the visit that Petrol and Diesel operated vehicles are emitting smoke and exhaust gasses in excessive quantity which are the leading sources of environmental pollution and responsible for the air quality worsening. In fact, exhaust emissions (including dangerous gases such as carbon monoxide, oxides of nitrogen, hydrocarbons and particulates) and Evaporative emissions (including vapors of fuel

which is released into the atmosphere, without being burnt) are the prime reasons of deterioration of air quality. It was however observed during the visit that environment of the project area is clean.

4.5.5 Noise

Noise is described as an unwanted sound emitted from un-avoidable sources of anthropogenic activities. Daily based natural induced sources of noise are rare to none but human induced noise sources are plenty and un-avoidable. Physically, there is no distinction between sound and noise. Sound is a sensory perception and the complex pattern of sound waves is labeled noise, music, speech, low altitude aero plane flying etc.

Environmental noise is a common cause of hearing loss of people indulged in industrial activities. Noise pollution in the city is on the rise with most residents complaining that the noise is becoming a public nuisance.

Project Site:

Noise level was monitored at the time of field survey.

4.5.6 Water Resource

The main source of the water consumption is the ground water which is being pumped from 200 ft borehole and its being used in the study area for domestic purposes. To check the quality of the water in the area, ground water was collected and analyzed. The ground water was collected from bore hole adjacent to the project area.

4.6 Socio-Economic Resources

This provides collective information about the existing socio-economic and environmental condition of the project area within the AOI. The different types of socio-economic aspects were covered such as demographic profile, occupation, education and health facilities. This data helped in identifying major interventions for the development of Environmental Management and Monitoring Plan (EMMP). The study also helped to assess the positive or adverse impacts on local community.

4.7 Socio-Economic Profile of Study Area

This topic provides an overview of the baseline information relating to the socio-economic environment of the project area and the AOI. The socio-economic study gives information about the demographic profile, occupation, education and health facilities in the project area.

4.7.1 Study Area Profile

The village profile reflects the basic socio-economic conditions of local people. These parameters indicate the needs of society while planning the the aforesaid project. The village profile has been obtained by meeting with community representatives who are well aware about their surroundings. The consultant, with his team, visited project area and study area in order to identify the socio-economic and environmental aspects of project. The following information is obtained by surveying the community.

Table 8: Study Area Profile

S#	Socio-Economic Indicators	Qutba
1	Language Spoken	Punjabi
2	Distance from Project Area	1.35 km
3	Accessibility of Road	Metaled Road
4	Transport	Public and Private Transport
6	Population	4000+
7	Livelihood	Agricultural, Livestock and Labor
8	Houses	More than 200

9	Educational Facilities	Primary School, Secondary School and Govt. & Private Schools
10	Institutional Facilities	Mosque
11	Civil Facilities Available	Electricity, Water Supply and Graveyard
12	Source of Water	Groundwater
13	Common Diseases	Fever, Hepatitis, Common Cold, TB, Typhoid, Diarrhea and Malaria
14	NGO Working in Study Area	NIL
15	Historical Place	NIL
16	Simble industries	10
17	Saw	15
18	Types of Trees	Neem, Kikkar and Eucalyptus
19	Disaster Management	NIL

20	Major problems of the Study Area	Safe Drinking Water, Sanitation and Sewerage System, Roads Access, Educational and Medical Problems.
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4.7.2 Demographic Profile

The Demographic Studies are the major source of any city's Socio-Economic profile. Demographic Studies relate to population. Population studies are extremely important from Town Planning point of view. Until and unless we know about population in detail, we cannot do successful planning. All aspects of population, such as sex-age composition, trend of migration, social, cultural, political, economic and administrative works, values and facilities have to be related to planning considerations and decisions. Individuals are the raw material of society; therefore, society is directly affected by size, growth, composition and distribution of its individuals. The term population refers to the number of individuals living within a geographical area at a given time.

Different community individuals in the vicinity of the project area have different family sizes depending upon their living setups. Average family size is however 5-7 individuals per family with 1-2 earning hands per family.

4.7.3 Health Facilities

As the project site is in an Industrial zone. DHQ Hospital Sheikhpura is located at the distance of approx. 8.5 Km radius. Some other private health center is present as Villages area present in the vicinity of the project site.

4.7.4 Educational Facilities

As the project site is not located in any residential area. However, the schools located around project with considerably safe distance.

4.7.5 Demographic Characteristics of the Population

The field survey (including interviews, focus group discussions, census, and area profile) was carried out to collect the socioeconomic data from the project affected

people as well as other general population to accomplish the baseline information, which will provide the basis for subsequent monitoring and evaluation studies.

The demographic features include the information on household's profile, gender composition, occupations, and literacy status of the population residing in the project area. The information relating to the demographic profile of the people in the project area are described below.

4.7.6 Family Size

Based on the field survey of local population, the average family size computed to be 5-6.

4.7.7 Age Groups

Ages of the consulted population were also recorded. The people interviewed for the socio-economic assessment belongs to different age groups i.e. 20-35 years, 36-45 years, 46-55 years, and 56 years and above.

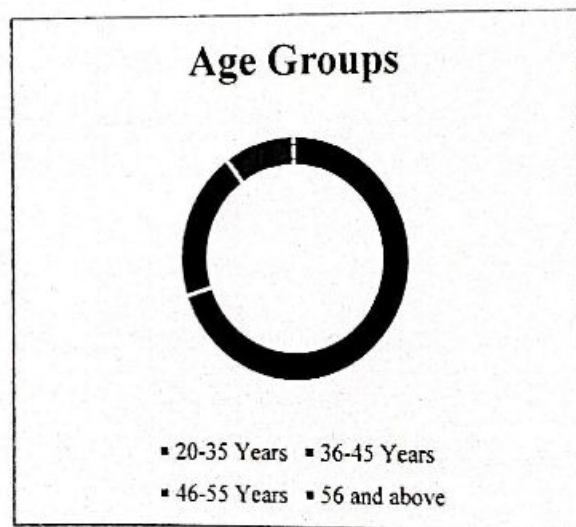


Figure 11: Consulted age groups in the area near project site

4.7.8 Occupation of Respondents

Majority of the respondents (55%) are attached with agriculture, 20% shopkeepers and remaining 25% are labors. During survey, efforts were made to interact with people representing all walks of life. The detailed graphic representation of occupational status is given below:

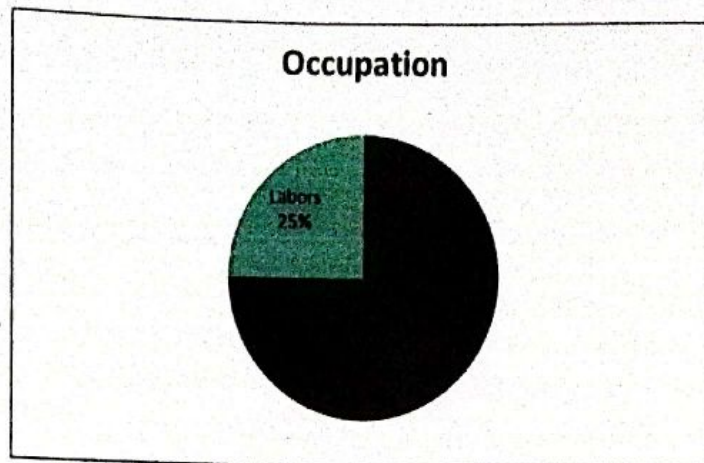


Figure 12: Occupation of Respondents

4.7.9 Literacy Rate

From survey results, it was found that 75 % of the studied population was illiterate, 15% was up to primary level, 10% studied up to middle level.

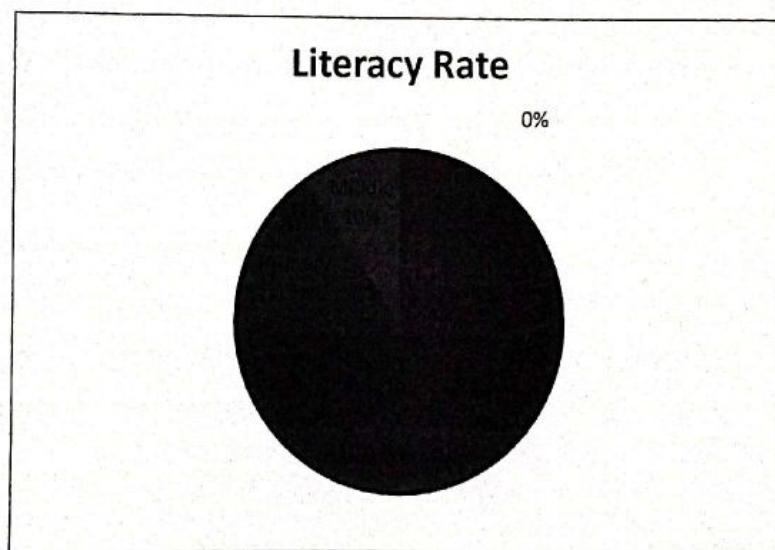


Figure 13: Literacy Rate

4.7.10 Common Diseases

According to the survey the common disease recorded in the project area is Hepatitis.

4.7.11 Cultural, Religious & Other Structures

No cultural, religious and other structures are present in the close proximity of the project area that needs to be relocated. Villages present around the project site have mosques and imam bargah.

4.8 Lab Reports of Environmental Analysis

Testing of different parameters was done from a certified laboratory named SEAL to check the quality of different environmental parameters. The copy of the lab reports of these parameters (ambient air analysis, water quality analysis and noise) is attached at Annexure of this EIA Report.

4.9 Suitability of Site:

Comprising all assessment of above baseline data there will be no significant ecological/ environmental impact expected in and around the present selected project site, hence it is suitable for the established project.

[REDACTED]

This section discusses the project's potential environmental impact on the area's geomorphology, soil, water resources, air, biological resources and socioeconomic condition and, where applicable, identifies mitigation measures that will reduce, if not eliminate, its adverse impact. The assessment carried out in this is based on potential impacts on overall environmental receptors within the project area.

5.1 Objectives

The objective of screening is identification of the adverse as well as beneficial impacts and then mitigating the effect of adverse impacts up to acceptable limits or within NEQS. Following are the objectives of screening out all significant environmental and social impacts:

- To find different alternatives and ways of carrying out the project activities which may cause adverse impacts.
- To enhance the Environmental and Social benefits of project
- To avoid, minimize and remediate adverse impacts.
- To ensure that residual adverse impacts are kept within acceptable limits.

In the sub-sections below the impact's assessment methodology for the established project of M/S Pyramid Gas Pvt. Ltd.(LPG Storage and Filling Station) located in Sheikhpura has been defined. It includes the magnitude, the extent of the impact and the nature of the anticipated impact.

5.2 Methodology

This Section discusses the project's potential environmental impact of established project of LPG Storage & Filling Plant on the area's geomorphology, soil, water resources, air resource, biological resources, and socioeconomic condition and, where applicable, identifies mitigation measures that will reduce, if not eliminate, its adverse impact. The assessment carried out in the sub-sections below is based on potential impacts on overall environmental receptors within the project area. Impacts are evaluated based on magnitude, immediacy and sustainability. Evaluation criteria are as follows:

5.2.1 Magnitude

The magnitude of the impacts associated with the established project of the M/S Pyramid Gas Pvt. Ltd., include the type of impact project commencement will cause to its immediate environment and social structure. It could be direct, indirect, and cumulative.

5.2.2 Immediacy

Immediacy of the impact focus on the following parameters:

- Temporal Extent (during operation)
- Spatial Extent (local or widespread)

5.2.3 Sustainability and Reversibility

Sustainability and reversibility of the impact focused on the following parameters:

- Mitigability (Fully/Partially)
- Monitoring (Fully/Partially)

5.3 Purpose of Mitigation Measure

The basic purpose of mitigation measures is to reduce the impacts of the established project of M/S Pyramid Gas Pvt. Ltd. on the socio-environment up to the maximum possible extent. The mitigation measures are suggested based on the following parameters:

5.3.1 What is the problem?

The project is already established LPG Storage & Filling Plant. The study area is leveled and Self-developed commercial. The major impact associated with the operation of building includes proper handling (storage and filling of LPG), wastewater and the management of the solid waste.

5.3.2 When problem will occur and when it should be addressed?

The impacts from the project of LPG Storage & Filling Plant will occur during the operation due to the civil work involved and the processes involved in activity. These issues include noise generation, emissions, solid waste management, wastewater

disposal, Health and Safety issues and change in the geographic features of the area. These all problems should be addressed on-site where they are being generated, to avoid the residual or adverse impacts.

5.3.3 Where problem should be addressed?

The problem will be generated from operation of the unit. So, it should be addressed on source i.e., at site within the same timeframe.

5.3.4 How the problem should be addressed?

Proper mitigations measures will be provided according to the nature of the impacts/problems.

5.3.5 Ways of Achieving Mitigation Measures?

Following ways will be adopted to reduce the impacts of the manufacturing unit:

5.4 Improved Management and Monitoring Practices

The anticipated impacts had been reduced significantly by adopting better management activities, as it will be carried out for betterment of the society. While environmental monitoring will be conducted on the regular basis to keep the sources of the air pollution, wastewater generation, noise, and public nuisances in-check. Following practices that need to be adopted to reduce the impact significantly:

a. Compensation in Money Terms

Due to the installation of established project, the geography/landscape of the area has been changed on the permanent basis, however, there is no protected or environmentally sensitive area present within 4.0 km vicinity of the project that could be impacted. Hence, no compensation in the monetary terms will be required. However, for the removed one tree from the project area 3-5 trees will be planted as the compensation.

b. Replacement/Relocation/Rehabilitation

The established project site is located in Self-developed commercial land and already constructed but not is operation yet. So, No replacement, relocation and rehabilitation will be required for the aforesaid project.

5.5 Impact Assessment Methodology

The impact assessment methodology for the established project of M/S Pyramid Gas Pvt. Ltd. is given below:

5.5.1 Screening of Potential Impacts

Based on site visit, observation, brain storming, provided information and social interviews, significant impacts were anticipated and evaluated. Then qualitative and quantitative (where possible) assessment of these anticipated impacts is to be carried out.

5.5.2 Identification of Mitigation Measures

After anticipation and screening of significant impacts, certain mitigation measures are to be provided in order to enhance benefits of project and reducing impacts. These measures can be classified as:

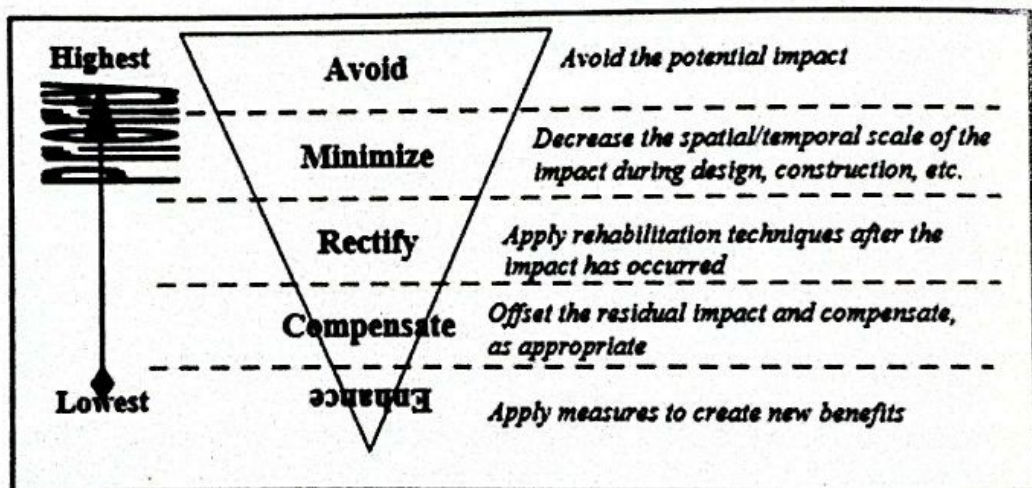


Figure 14: Hierarchy of Mitigations

5.5.3 Evaluation of the Residual Impacts

Incorporation of suggested mitigation measures may reduce the magnitude of the environmental impacts of the project but sometimes, it may fail in bringing them within the acceptable limits. This step refers to the identification of the anticipated remaining impacts after mitigation measures have been applied.

5.5.4 Identification of Monitoring Requirements

The last step in the assessment process is the identification of minimum monitoring requirements. The scope and frequency of monitoring depends on the residual impacts. The purpose of the monitoring is to confirm that the impact is within the prescribed limits and to provide timely information if acceptable limits are being breached.

5.6 Impact Evaluation

Impact screening checklist and project impact evaluation matrix have been developed to evaluate the potential impacts of the established project of M/S Pyramid Gas Pvt. Ltd. on the basis of set procedures as given in the environmental guidelines by Punjab EPA.

5.6.1 Methodology for Impact Evaluation

These tools have been used to identify the significance and magnitude of the impact as well as the nature, reversibility, and extent:

1. An Impact Screening Checklist
2. Project Impact Evaluation Matrix

Following is given a brief description of assessment tools:

a) Impact Screening Checklist

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

Table 9: Impact Screening Checklist

Sr#	Environmental Component	Impact Characteristics												
		Duration		Location		Frequency		Extent		Significance			Reversibility	
		Long	Short	Direct	Indirect	Continuous	Intermittent	Wide	Local	Large	Moderate	Minor	Reversible	Irreversible
Beneficial Impacts														
1	Employment Opportunity	☒		☒		☒			☒		☒		☒	
2	Availability of Raw-Material	☒		☒		☒			☒		☒		☒	
3	Appreciation in Land Value	☒			☒	☒			☒			☒		☒
4	Energy Availability	☒		☒		☒			☒		☒		☒	

Adverse Impacts														
1	Air Pollution		•	•			•		•			•	•	
2	Wastewater		•	•		•			•			•		•
3	Solid Waste and By-Products	•		•		•			•		•			•
4	Health and Safety		•		•		•		•			•	•	
5	Chemical Hazards		•	•		•			•		•		•	
6	Physical Hazards		•	•			•		•			•		•
7	Security Risks		•		•		•		•		•		•	

b) Project Impact Evaluation Matrix

The Project Impact Evaluation Matrix was developed by placing different environmental parameters that are likely to be affected by the project actions, grouped into categories i.e., physical, ecological and socio-economic environment. For the impact assessment risk assessment methodology was used. Moreover, the risk assessment was done on the basis of project phases (planning & designing, and operation). A Project Impact Evaluation Matrix is attached as Table below:

Table 10: Impact Evaluation Matrix

Environmental Parameters	Impact Assessment during operational Phase
A: Physical	
Land Resources	
Soil Erosion and Contamination	0
Transportation	-1t
Solid Waste and By-Products	-1p
Land Use	NA
Air Resources	
Noise Pollution	-1t
Air Pollution	-1p

Dust Emissions	-1t
Water Resources	
Ground Water	-1p
Surface Water	NA
Wastewater	-2p
B : Ecological	
Flora	
Tree Cutting	+1p
Fauna	
Terrestrial Fauna	+1p
C: Socio-Economic	
Employment Opportunities	+3p
Land Value Appreciation	+2t
Availability of Local Raw-Material	+2p
Economic Uplift	+3p

D: Hazards	
Physical Hazards	-1p
Chemical Hazards	-1p
Health and Safety	-1p
<i>Legends: 1= Low; 2= Medium; 3= High; 4= Extremely High; NA= Not Applicable; t= Temporary; p= Permanent; app= Applicable; 0= Negligible</i>	

This Chapter identifies the potential impacts (positive and adverse) on the physical, biological and socio-economic environment of project area due to the established project of M/S Pyramid Gas Pvt. Ltd. It also identifies measures that will help to mitigate the adverse environmental impacts and will enhance positive impacts of the project. Impacts are assessed by analyzing their magnitude and sensitivity, which is a legal requirement.

6.1 Impact and Mitigation Management

Purpose of mitigation is to evade, reduce or balance the expected antagonistic effects in suitable way and to integrate these for devising environmental management strategy or plan. At every stage of the project, mitigation plan for all the adverse impacts should be predicted to find out the best alternative. The objectives of mitigation are to:

- ⇒ Invention of best substitution, better alternatives, and ways to reduce the adverse environmental and social impacts on the surroundings.
- ⇒ To improve the environmental and societal payback of the project
- ⇒ To prevaricate, remedy or reduce, pro-vocative impacts.
- ⇒ To certify that remaining negative influences are kept within permissible limits.

In this part of the EIA Report, several complications including cleanliness, environmental health and safety, societal and environmental managing and inspection, industrial vulnerability, tools, and apparatuses and during operational activities, influx of workers and procurement of land have been deeply elaborated.

6.1.1 Approaches for Mitigation Measures

Following approaches may be used to mitigate the impacts of the project:

Table 11: Approaches for Mitigation Measures

Avoid: Change of route or site details, to avoid damage

Replace: Regenerate similar habitat of equivalent ecological value in different location

Reduce: Filters, precipitators, noise barriers, dust, enclosures, visual screening, wildlife corridors and changed time of activities to reduce the impact

Restore: Site restoration at the end of the operational activities

Compensate: Relocation of displaced communities, facilities for the affected communities, financial compensation for the affected individuals, etc.

6.2 Expected Positive Impacts

Following are the expected outcomes of the established project of the M/S Pyramid Gas Pvt. Ltd.:

6.2.1 Increase in Employment Opportunities during Construction Phase

Due to the established project of LPG Storage & Auto Filling Plant in Sheikhpura the employment opportunity will be enhanced. It will include technical and non-technical staff. Locals will also have the opportunity to diversify their income by being employed. Hence, there will be an increased employment opportunity for the local people which will have a positive impact on the socio-economic status of the area.

6.2.2 Efficient and Economic Residential Availability

In addition to all these benefits, the project will result in the general economic and social uplift in the areas of the Sheikhpura.

6.3 Adverse Impacts and Mitigation Measures

This section identifies the potentially significant and insignificant adverse environmental and social impacts anticipated during the operation phase for the

established project of M/S Pyramid Gas Pvt. Ltd. Appropriate mitigation and management measures, where applicable, have also been suggested to reduce the severity of the anticipated impact up to the extent possible.

6.4 Impacts Due to Project Location

The proponent has selected the site owing to the following reasons:

- ✚ The site is undisputed and allotted to the proponent
- ✚ The site has the potential to store the required amount of the raw-material
- ✚ There is no community or human settlement present on-site
- ✚ There is no fauna or flora belonging to an endangered species present on-site
- ✚ The site has accessible through road network i.e., connected to the main road via access roads
- ✚ There is no ecologically sensitive or declared protected area (PA) like; Reserved Forest, Fish Hatcheries, Territorial Waters, Wildlife or Game Reserves. Moreover, there is no socio-cultural significant structure (historical or archaeological site or religious structures; Masjid, temples, etc.) located within safe radius of the selected site that could be impacted.

It can be concluded in view of these reasons that the selected site is best suited for the project, and will not pose any adverse impact or threat on any component of the environment

6.4.1 Relocation of People

Currently, there are no infringements on the project site that may be affected therefore relocation exercises are not required.

6.4.2 Loss of Vegetation

Considering the scale of the project and commonly found flora and fauna within the project influence area, no significant adverse effects are envisaged on the ecology of the area.

6.4.3 Shifting of Utilities.

There will not be any shifting of existing utilities such as water supply pipelines, sewers, electrical lines, etc. due to the project.

6.4.4 Impact on Archaeological/Cultural Property

Within the project influence area there are no significant archaeological properties, hence no impact in this area is anticipated.

6.5 Impacts Due to Project Design

During design phase most of the impacts will disturb the physical environment as well as the parameters associated with the social structure of the society.

6.5.1 Location

While citing a project, care should be taken to minimize the adverse impact of the facility on immediate neighborhood as well as distant places. The application of good and sound citing criteria is often the best and first strategy to minimize the environmental and social impacts that can be caused by a project. The site is undisputed open rural land and under the ownership of the Proponent.

Easy road access, no settlements in close vicinity, no archeological or cultural resources to be dismantled or relocated, and no ecologically sensitive or declared protected area existing on established site that favors the point of no impact due to project location.

Mitigation

No mitigation measure is required as the established project will not have any adverse impacts on its surroundings due to significant distances from sensitive receptors.

6.5.2 Designing

At the design phase, no considerable impact will occur on land, soil, topography, ground water, and on people of the area. However, in pre-construction phase a management system should be provided at design level so impacts can be reduced. Design of the established plant will adhere to all standard technical requirements in order to avoid adverse impacts on environment and human health.

Mitigation

The Proponent intends to construct the unit on modern lines, meeting International Standards, with incorporation of modern technology. The design, if maintained and operated in an environment-friendly manner, is expected to cast positive impact on the Environment and will not pose any adverse impact or threat on any component of the Environment.

6.6 Impacts Due to Project Construction

Project is already constructed.

6.7 Impacts Due to Project Operation

During the operation phase, there will be impacts on the air, water, and land environment, as well as on socio-economic aspects. The following sub-sections present the impacts due to the operation of the established project.

The Environmental and Socio-Economic impacts associated with the operation phase of the power plant are following:

- Air Emissions
- Noise
- Wastewater
- Water Resources
- Waste Management
- Occupational Health and Safety

6.7.1 Water Consumption

The increased withdrawal of surface water for the Established Project may affect the water availability for the other users of the Project Area. A significant impact will be interpreted if water extracted for the project directly affects the ability of the community and other users to meet their water needs.

Impact Assessment

Water usage will be only domestic in nature.

Mitigation Measures

Water conservation program will be initiated in plant colony to prevent wastage of water.

6.7.2 Water Quality

Potential Impacts

Water pollution is contamination of water by undesirable foreign matter. It impacts surface water and underground water. At the project site, there will be no wastewater generation during operational activity as project does not involve any processing and no water will be consumed during storage except domestic purposes. The discharge of effluent from unit will be only municipal.

Mitigation Measures

There will be no any industrial activity, so no wastewater will be generated, domestic wastewater will be treated by passing through septic tanks to soakage pit.

5.7.3 Soil Contamination

Leakage of petrol or diesel from tankers arriving on site during process of LPG station can cause soil contamination.

Mitigation Measures:

Ensure that vehicles are well tuned and have no leakage.

6.7.4 Air Quality

Project only involves storage and filling of LPG, not any industrial activity so there will be no emissions. Only dust will be generated during floor cleaning that will be controlled by water sprinkling. In case of leakage, broken down pipes, LPG could escape which will have certain impacts on workers. For this, Gas detectors will be provided. Further PPEs will also be provided to workers to cater this situation and ensure safety and health.

6.7.5 Noise and Vibration

Project only involves storage and filling of LPG, not any industrial activity so there will be no noise generation. Noise will only be generated during transportation, for this

only those vehicles will be used that are properly tuned and maintained and are equipped with silencers. Also excessive use of horns will be avoided. Further tree plantation will be done as it acts as noise absorbers.

Residual Impacts

Implementation of the mitigation measures established above will result in negligible / no residual impact due to noise on surrounding environment.

Monitoring Requirements

During project operation, it should be ensured that the noise level at the project site does not exceed the prescribed limits.

6.7.6 Solid Waste Management

Potential Issues

The solid waste generated during the operational phase of Established Project can pose a health hazard, pollute the soil, surface and ground water if not managed properly. A significant impact will be interpreted if the waste management is not carried out properly; which may affect to health of workers, pollution of soil, surface or groundwater.

Impact Assessment:

Potential source of solid waste from operational activities include:

- ✚ Office waste
- ✚ Plastics
- ✚ Rags
- ✚ Paper

No significant impact on the environment is anticipated from solid waste generation at the project site as the generated solid waste comprise of a domestic waste and waste scrap mainly which would be sold to their respective dealers.

Mitigation Measures

Key elements of the Waste Management System will be the following:

- ✚ Separate waste bins will be placed for different type of wastes

- ✚ Records of all waste generated will be maintained. Quantities of waste disposed, recycled, or reused will be logged on a Waste Tracking Register.
- ✚ Waste will be managed by solid waste management contractor.

Residual Impacts

Proper implementation of the mitigation measures will ensure that the residual impact from waste is minimum. Monitoring and inspection will be undertaken to ensure compliance and minimize any residual impact.

6.7.7 Emergency Response

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

- Fire hazard

6.7.8 FIRE HAZARD

During operational phase of the project, fire hazard poses a serious threat. Fire extinguisher details are mentioned on map.

Mitigation

- ✚ Fire extinguishers should be properly maintained and checked periodically.
- ✚ Adequate fire hydrant system should be installed.
- ✚ Flammable materials should be prohibited in the premises.
- ✚ Fire alarm systems should be maintained for detection and warning of fire.
- ✚ Pressure gauges should be checked monthly.
- ✚ Adequate training of workers on use of firefighting system to deal with the situation.
- ✚ Administration of the unit will make a proper evacuation plans for emergency escape from all halls.
- ✚ Emergency call service must be made available.
- ✚ Firefighting team must remain ready at all times.

6.8**Potential Environmental Enhancement Measures****6.8.1 Tree Plantation**

Tree plantation within and outside the premises is a potential environmental enhancement measure. A large area will be reserved for tree plantation and among plants native flora like Peepal, Kikar, Dherak, Safeeda and Amaltas will be planted in the specified green zone which will have the maximum capacity to reduce noise pollution and tolerance index of these species are more than 10. Some floral species like roses and other ornamental evergreen plants will also be introduced in the lawn which will enhance aesthetic beauty. In addition, trees like Safeeda and Amaltas will be planted as boundary wall inside the lawn which will look like green wall. The proponent will also make arrangements for protection and maintenance of trees.

6.8.1 Facility Design

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

6.9 Social Enhancement Measures

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

6.9.1 Employment/Poverty Alleviation

The employment opportunities in the project area will be increased due to the established project of LPG storage and filling unit of M/S Pyramid Gas Pvt. Ltd.. Limited at the aforesaid location. During established project of the aforesaid facility un-skilled workers will be required as labors, sanitary workers and sweepers as well as for the skilled workers such as; accounts and managers to run the administration office local community will be considered on the priority basis. In totality, the overall economic conditions of the area will be improved due to the established project of the aforesaid project.

6.9.2 Local Economy

The employment opportunities and/or income sources generated by the project construction and operation will be long term in nature. These will be enhanced once the construction phase is completed. The local economy will experience a slight boom during development and operational period.

This chapter summarizes the various mitigation measures as outlined previously in this EIA Report that will be implemented during the construction, operational and decommissioning stages of project. It does not discuss further the mitigation measures which have been adopted within the design and planning of the project, as these are comprehensively covered in previous section of this EIA Report.

Outline and key features of the EMMP for operations phase is presented. As per the environmental legislation in Pakistan, the EMMP for the operations phase, along with other documents, is to be submitted to the environmental protection agency to obtain confirmation for compliance and Environmental Approval for project operation. Even after implementation of the suggested mitigation measures, the impact may remain significant, and require monitoring.

7.1 Objectives

An Environmental Monitoring Plan was outlined alongside Environmental Management Plan to ensure all the corrective actions to counter adverse impacts which gives a detailed EMMP. The EMMP will serve as a principal execution module of the project that would not only mitigate adverse environmental impacts during the construction and the operational phase of the project but also ensures that environmental standards and good in-housekeeping are being practiced. Continuous environmental monitoring is exercised to ensure that preventive measures are in place and effective to sustain environmental integrity. The key objectives of EMMP are:

- To outline functions and responsibilities of persons
- To state and implement standards and guidelines which are required under environmental legislations particular in context to the Project.
- To facilitate the implementation of the mitigation measures by providing the technical details of each Project's impact and proposing implementation schedule of the established mitigation measures
- Define a monitoring mechanism and identify monitoring parameters to ensure that all established mitigation measures are completely and effectively implemented.

- Identify the resources required to implement the EMMP and outline corresponding financing arrangements.

7.2 Management Approach

The organizational roles and responsibilities of the key players are summarized below:

7.2.1 Proponent

The project proponent will undertake overall responsibility for compliance with the EMMP. The concerned departments will carry out verification checks to ensure that the contractors are effectively implementing their environmental and social requirements.

7.2.2 Contractors

The contractors will implement most environmental and social mitigation measures. The contractors will carry out field activities as part of the project. The contractors are subject to certain liabilities under the environmental laws of the country, and under its contract with proponent.

7.3 Components of EMMP

The EMMP consists of the following:

- ⇒ Institutional arrangements
- ⇒ Mitigation plan to reduce the severity of associated impacts.
- ⇒ Monitoring plan to monitor the impacts and their severity.
- ⇒ Environmental and social trainings to raise awareness.

7.3.1 Remedial and Mitigation Measures

The objective of remedial and mitigation measures in any project is to identify practices, technologies or activities that would prevent, minimize, or mitigate all significant negativities that are likely to occur due to the established project.

7.4 Environmental Management and Monitoring Framework

The purpose of the environmental management and monitoring framework is to facilitate the implementation of environmental commitments, included in the

environmental impact assessment. The proponent is committed for the protection of the environment and to the sustainable management of its related operations and activities.

Table 12: Environmental Management Plan

Employment Opportunities				
To promote the employment of local persons	Recruitment of local workers will be undertaken without discrimination and in accordance with recruitment policy by contractors involved. The employment will be based on skills and working attitude that of industrial level.	Proponent /Contractor	On commencement of construction and operational activities	Unemployed people of area will get job opportunities and their standard of living will be improved
To promote the use of local service providers	Local procurement of goods and services will be undertaken wherever possible and cost effective and where practicable to the project	Proponent /Contractor	On commencement of construction and operational activities	Indirect job opportunities
Pollution control management				
To contain solid waste	• Proper maintenance of vehicles and equipment will be undertaken. • Appropriate environmental security measures including shovels and plastic bags etc will be provided to prevent accidental release to ground. • Appropriate procedures and protocols to be established and	Contractor	Throughout project life	Potential for accidental release of materials during transport and handling on the site will be minimized.

	monitored for materials transport and handling whilst on the site. Temporary waste bins will be provided for the solid waste which be managed as per municipality practices of the area.			
Protection of biodiversity				
To avoid unnecessary disturbance of and quick recovery of biodiversity in the site	- Avoid destruction of biodiversity outside and inside the project area - Minimize clearing of vegetation - Prepare and implement an appropriate landscaping program to help in re-vegetation of affected project areas after construction - The flora of the site should be restored at the end of the phase by landscaping and planting native vegetation	Contactors	Throughout project life	Vegetation loss cannot be avoided, but successful restoration, improvement and long-term management of the surrounding areas and maintenance of planted trees will provide significant compensation
Wastewater management				
During the performing activities chances of the groundwater water contamination are quite low	- Land disturbance will be minimized as much as possible. - Proper LPG storage techniques will be adopted to avoid leakage and to prevent the erosion of soils. - Drainage ditches will only be constructed where necessary.	Contractor	Throughout project life cycle	None

	- Existing drainage systems / channels will not be altered. - Regular water sprinkling will be done to control fugitive dust emissions that may become cause the deterioration of the water resource. - Earthy materials and runoff should be handled in a manner that prevents adding suspended solids to flowing water which will prevents water pollution			
Air quality and dust management				
The major source of air emissions is from extraction activities, emissions from the transportation, generators.	- Fugitive dust emissions will be reduced significantly by converting the un-metalead road to the stone road by using the aggregate. - Speed limits will be enforced to reduce airborne fugitive dust from vehicular traffic. - Re-vegetation will be done to the disturbed areas as soon as possible after disturbance. - Regular water sprinkling will be done to suppress the fugitive dust emissions. - Training will be given to workers to handle loose materials and debris to reduce fugitive emissions.	Contractor	Throughout project life cycle	Localized minor effects on air quality at properties very close to certain roads, but increments a very small fraction of air quality criteria.

- Employment of water sprinkling will be done on all material as the most effective means of reducing the dust emission is wet suppression. Watering exposed surfaces and soil with adequate frequency to keep soil moist at all times can reduce the total dust emission from the project by as much as 75%
- Dust emission from storage stockpiles will be reduced by covering the piles, for example with tarpaulin or thick plastic sheet
- Good quality (low-sulfur) fuel will be used for vehicle and machinery
- Provision of dust respirators to equipment operators who are exposed to dust while operating their equipment

Noise & vibration

To minimize disturbance of communities due to noise

- No residential community is located within safe radius of the project area. So, no mitigation is required to reduce the impact on the community
- Reducing equipment noise at source by proper design, maintenance and repair of machinery and equipment

Proponent / Contractor

Throughout project life cycle

Noise level will be based on PEQs

	- Noise from vehicles will be minimized by use of proper silencers and mufflers - Hauling trucks shall be operated at low speed to minimize vibration, promote road safety, etc. - Personal Protective Equipment (PPEs) should be given to the workers working on-site and wearing of the PPEs should be regulated strictly by the concerned authority - Tree plantation may be done to reduce the impact habitats and fauna significantly			
Land quality				
Accidental release of fuels, oils, materials, etc., to the ground	- Appropriate procedures and protocols to be established and monitored for materials delivery and handling. Proponent will have, at all times, clean up kits available. - All storage areas will have appropriate environmental security measures to prevent accidental release to ground. - Appropriate procedures and protocols to be established and monitored for materials handling and use. Where possible, refueling and maintenance	Contractor / Proponent	Throughout project life cycle	Potential for accidental release of materials during use, handling and storage will be minimized/ controlled.

	areas will include some form of secondary containment.			
Ecology				
Disturbance of wildlife	- No hunting, trapping and harassment policy will be adopted in case of fauna seen at the site - Trading of the wild fauna will be strictly banned - Rehabilitation and Re/Afforestation	Contractor / Proponent	From start of operation	The project site does not have any sensitive species.
HSE				
To minimize loss work injury/hazards/incidents/accidents	- Health and Safety SOPs will be enforced - Personal Protective Equipment (PPEs) will be given to the workers & wearing of the PPEs will be regulated strictly by the concerned authority - Exist route should be demarcated clearly - First aid kits and facilities to treat minor injuries should be present on-site - Routine free medical check-ups of the workers should be done on the regular basis - Ambulance and related equipment should be made available immediately	Contractor / Proponent	Throughout life cycle of project	Potential of injuries will be minimized

	in the case of emergency and in the case of the disaster • A Barr cation/stop sign will be put up on the access road to avoid any unfortunate incident • A low-speed limit for the access road will be enforced • Community complaints register, and other mean should be adopted for the community to complain. • All entry points into the area should be staffed 24 hour a day. People who are not related to the project should not be allowed inside. • No machinery should be left unattended, particularly in the running condition. • Placement of: DCP Fire Extinguishers 6kg (4) DCP Fire Extinguishers 50 kg (2) CO₂ Fire Extinguisher 5 Kg (2) Halotron Fire Extinguisher (2) At different and easily accessible points. Provision of: • Fire blankets (2)			
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- | | | | | |
|--|---|--|--|--|
| | <ul style="list-style-type: none">• Portable extension aluminum/fiber ladder (1)• Fireproof suit (2)• Gas protective goggles (4)• Face shield (4)• Gum boots (4 pairs)• Safety helmets (4)• Suitable gloves (4 pairs)• Portable torch (high beam) (2)• Breathing apparatus (1)• CCTV cameras (6) | | | |
|--|---|--|--|--|

7.4.1 Environmental Management Team

The established institutional arrangement for the implementation of EMMP is based on the discussions held with the Forest Department, Environmental Protection Department, Local Union Council Office and Proponent. The discussion concluded that three types of institutional arrangements are essential for the effective implementation of EMMP, these are follows:

- Established project of Environment/Social Management Group
- External Monitoring by EPA certified laboratory
- EMC established by Proponent after consultation with consultant.

a. Roles and Responsibilities

Following are the designated roles and responsibilities of the employees involved in the monitoring and management of the adverse impacts:

Table 13: Roles and Responsibilities

Roles and Responsibilities		
Sr#	Concerned Persons	Duties
1	The Project Manager	Following will be the responsibilities of the Project Manager. • Monitor the implementation of the EMMP throughout the project by means of site inspections and meetings. This will be documented as part of the minutes of the site meeting documents. • Ensuring project execution within defined budget and timelines • Conducting regular check of the project status and meetings with project team

		• Provide support and guidance to project team as and when needed. • Project Manager is expected to continually monitor and improve the overall performance of their operation
2	HSE Manager	In addition to the health and safety responsibilities held by staff, managers and supervisors must do whatever is reasonably practical to ensure that both the workplace and the work itself are safe. This includes: • Ensuring that staff are appropriately trained and supervised. • Identifying, assessing, and managing health and safety risks • Consulting with workers (including staff, affiliates, and contractors): i. Health and safety risk assessments ii. Decisions are made about the measures to be taken to eliminate or control these risks. iii. Health and safety risk assessments • Implementing health and safety risk management programs relevant to their operations, teaching, research and consulting functions and work environment • Reporting (to the Human Resources Unit), investigating and responding to all hazards, accidents, incidents and taking action to control the risk. • Assisting with the development, implementation and maintenance of a return-to-work program for injured staff. • Be fully conversant with the EIA and conditions of its approval. • Be fully conversant with the EMMP.

		• Be fully conversant with all relevant environmental legislation, policies, and procedures, and ensure compliance. • Undertake regular and comprehensive inspection of the site and surrounding areas in order to monitor compliance with the EMMP. • Take appropriate action if the specifications contained in the EMMP are not followed. • Monitor and verify that environmental impacts are kept to a minimum, as far as possible. • Review and approve construction methods, with input from the Site Manager, where necessary • Ensure that activities on site comply with all relevant environmental legislation. • Compile progress reports on regular basis, with input from the Site Manager, for submission to the Project Manager, including a final post excavation audit. • Liaise with the Site Manager regarding the monitoring of the site. • Report any non-compliance or remedial measures that need to be applied • All environmental problems arising on the construction area will be reported to the Site Manager by the Environmental Manager. Reports on such problems will be submitted to the Project Manager by the Site Manager
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7.4.2 Impacts Management and Monitoring Plans

The following environmental issues are considered to warrant specific management actions for the implementation of project. These issues have specific regulatory requirements (contained in the development consent or Environmental Approval) and/or are considered to have the potential to result in a non-compliance with a legislative requirement or generate community complaints.

7.5 Established Monitoring to Assess the Performance of EMP

An environmental monitoring plan provides a delivery mechanism to address the adverse environmental impacts of a project during its execution, to enhance project benefits, and to introduce standards of good practice to be adopted for all project works. An environmental monitoring program is important as it provides useful information and helps to:

- Assist in detecting the development of any unwanted environmental situation, and thus, provides opportunities for adopting appropriate control measures, and
- Define the responsibilities of the project proponents, contractors and environmental monitors and provides means of effectively communicating environmental issues among them.
- Define monitoring mechanism and identify monitoring parameters.
- Evaluate the performance and effectiveness of mitigation measures established in the Environment Management Plan (EMP) and suggest improvements in management plan, if required,
- Identify training requirement at various levels.

An environmental monitoring plan is suggested to monitor environmental parameters during survey, construction and post construction phase of the project.

Following environmental record should be maintained:

- Incident record of all moderate and major spills and other incidents and accidents.

The record will include:

- ✓ Location of spill or Spilled material
- ✓ Estimated quantity or the amount of injury.
- ✓ Nature of injury or loss (temporary or permanent)
- ✓ Restoration measures
- ✓ Photographs
- Description of any damage to vegetation, water resource, or community asset.
- Corrective measures taken if any
- Waste Tracking Register that will hold records of waste generated during the construction period. This will include quantities of waste disposed, recycled, or reused.
- Records of water consumption with usage breakdown
- Survey reports, in particular, the following:
 - ✓ Vehicle and equipment noise.

- ✓ Ambient noise survey reports.
- ✓ Ambient level of PM
- ✓ Vendor data—all vendors disturbed by the project and compensation paid
- Public infrastructure: Record of all damages and repair work undertaken.
- ✓ Employment
- ✓ Total number of unskilled, semi-skilled, and skilled jobs offered during Construction.
- ✓ Name and domicile of the employed staff.
- ✓ Project and Community Interface
- ✓ Record of community complains, and the measures taken to address them.
- ✓ Number of meetings held in various communities and data of persons who attended
- ✓ Environmental and social training records.

Table 14: Environmental Monitoring Plan

Components	Objective of Monitoring	Parameter to be Monitored	Measurement	Frequency	Location	Responsibility
Noise level (dB)	To check whether the existing noise control measures are able to bring the sound level within prescribed limits	Noise level near the receptor	Noise Measurement	Annual	Near the machinery working area & at a distance of 100 m	Environment officer
Emission of Gases and Particulates which may pollute the Environment	To determine the effectiveness of the Air Pollutants' abatement devices	Source Emission parameters	Ambient Air	Quarterly / Monthly (depending on frequency of operation)	Near the machinery working area & at a distance of 100 m	Environment Officer/Manager
Waste disposal, procedure for waste collection, storage, and disposal	To check the availability of waste management system and implementation	Inspection of waste management practices	Visual inspection	Per routine	Project area	Cleaning Department
Safety	To check and evaluate the effectiveness of the workers' safety plan and availability and access of first aid facilities	Injuries	Injuries being recorded	Daily	Entire working area	Health & Safety

7.5 SOCIAL MANAGEMENT PLAN

Based on the initial benchmark study, the following preliminary recommendations will be further adjusted according to the results of the Social Impact Assessment process to be conducted at a later stage:

- The management of the Project can capitalize on the positive attitude of the people of area towards established Project by offering them maximum employment opportunities based on the available skill and working attitude.
- Insufficient and inadequate socio –economic structure of the community of the area also provides ample opportunities to the Proponent to win sympathies of local people in their favor, by introducing meaningful and manageable plan of the community development.
- Extensive and comprehensive plantation plan can also lessen fear of local people towards environmental issues.
- Sustainable development approach through conservation of natural resources would be the best strategy to improve environment, conserve resources and strengthen ecological resilience.
- Proponent should offer technical training opportunities to the local youth, if possible, to improve technical knowledge at local level, engage young generation in fruitful activities and skill development and adequate time management.
- Socially responsible attitude and stewardship of Proponent towards local people and resources can make project more people friendly.
- To avoid any political, ethnic and value conflict, Proponent may win the confidence of local powerful elites, authorities, leaders and interest groups by adopting informal confidence building measures.

7.6 Established EMP Reporting and Reviewing Procedures

An effective mechanism to store and communicate environmental information during the project is an essential requirement of an EMP. The organizational structure for the Environment Management Plan is outlined below:

7.6.1 Primary Responsibilities

The primary responsibility for implementing different aspects of the EMP within the company lies with the Proponent / Contractor.

7.6.2 Operation Management & Control

Conducting the operational activities in environmentally sound manner will be the responsibility of the concerned Manager; for which he will be trained.

7.6.3 Supervision & Monitoring

Senior Supervisor will be responsible for all environmental issues and for the implementation of EMP.

7.6.4 Communications & Documentation

An effective mechanism to store and communicate environmental information during the project is an essential requirement of an EMP.

7.6.5 Meetings

As environment is multidisciplinary subject with environmentalist having a dynamic role therefore Environment Officer would be considered as integral part in both constructional and operational team. Participation of Environment Officer in daily morning meeting and any other special meeting is mandatory. Besides internal meeting HSE Engineer/Environment Officer is also responsible to conduct meeting with local in keeping administration in liaison.

7.6.6 Changes-Record Register

A change-record register will be maintained at the site, in order to document any changes in project design. These changes will be handled through the change management mechanism.

7.7 Training and Capacity Building

Training and capacity building trainings are conducted on the regular basis to enhance the capacity of the workers hired for the working. Following is the detailed plan along with the schedules of the training:

Table 15: Training and Capacity Building Plan

Training and Capacity Building Plan			
<i>Potential Impacts</i>	Operation Phase		
	During operational phase, nearby society and workers will face problems like:		
	• Air Pollution • Noise Pollution • HSE • First Aid Training		
<i>Mitigation</i>	Training and Capacity Building Plan		
<i>Management Plan</i>	Training and Capacity Building Plan Project will ensure training for the project staff, labour and the supervisory staff of the Proponent through the provision of one day basic training on recruitment and then on all needed skills, covering environmental and social aspects of the project in general, and implementation requirements will emphasis on the development projects in general, and implementation requirements with emphasis on the roles and responsibilities of the staff and the labour while executing the environmental monitoring plan in particular. The training protocols will include the following aspects: ⇒ Procedures for monitoring the air quality parameters and measures to be adopted for avoiding or minimizing air pollution ⇒ Safe waste disposal practices ⇒ Safety measures against hazards for workforce and the local communities arising from the construction activities ⇒ Use of safety gadgets by the workforce		
<i>Monitoring</i>	Responsibility	Responsible	Monitoring Duration
	Training of staff, vehicle operators and labour	Project Manager / Operations Manager	Once on recruitment then on required skill

7.8 Impacts and their Mitigation Summary

Environmental and social impacts have been identified for the established project of the building; their impacts had been mitigation by adopting required measures as

recommended in EMMP of this EIA Report within the Project Area of Influence. The major impacts on physical, biological and social environment are described as under:

Table 16: Impacts Summary

Environmental Parameters	Impact Assessment during operational Phase	
	Operational	
A: Physical		
Land Resources		
Soil Erosion and Contamination		0
Transportation		-1t
Solid Waste and By-Products		-1p
Land Use		NA
Air Resources		
Noise Pollution		-1t
Air Pollution		-1t
Dust Emissions		-1t
Water Resources		
Ground Water		-1p
Surface Water		NA
Wastewater		-2p
B : Ecological		
Flora		
Tree Cutting		+1p
Fauna		
Terrestrial Fauna		+1p
C: Socio-Economic		
Employment Opportunities		+3p
Land Value Appreciation		+2t
Availability of Local Raw-Material		+2p
Economic Uplift		+3p
D: Hazards		

Physical Hazards	-1p
Chemical Hazards	-1p
Health and Safety	-1p
Legends: 1= Low; 2= Medium; 3= High; 4= Extremely High; NA= Not Applicable; t= Temporary; p= Permanent; app= Applicable; 0= Negligible	

7.9 Equipment Maintenance Details

The Client and Contractor will be responsible to maintain equipment with higher efficiency and in good working conditions. The equipment will be maintained twice a year as well as monthly inspection will be done on the regular basis to keep the process going without any interruption.

7.10 Environmental Budget

Approximately 0.2 million PKR per year budget will be reserved for the Environmental Monitoring and measures. It will also include cost for plantation, providing PPEs and HSE trainings.

Table 17: Breakdown of Environmental Budget

Particulars	Capital cost	Recurring cost/ annum
Pollution Monitoring-Air, Water, Noise	120000	35000
Dust Suppression – water sprinkling	65000	15000
Plantation including maintenance	90000	40000
Fire Extinguishers and Safety Equipment's	180000	50000
Miscellaneous	45000	10000
TOTAL	200,000	150000

Public consultation refers to the process by which the concerns of local affected persons and others who have a plausible stake in the environmental impacts of the project or activity are ascertained with a view to taking into account all the material concerns in the project or activity design as appropriate. According to the EIA and EIA Review Regulations, public consultation is mandatory for any socio-environmental study.

8.1 Proponent's Environmental Management Team

Following are the designated roles and responsibilities of the employees involved in the monitoring and management of the adverse impacts and will be appointed after operation of project starts.

Roles and Responsibilities		
Sr#	Concerned Persons	Duties
1	The Project Manager	Following will be the responsibilities of the Project Manager. • Ensure that the contractor is aware of all specifications, legal constraints, standards, and procedures pertaining to the project specifically with regards to environment. • Ensure that all stipulations within the EMMP are communicated and adhered to by contractor(s) • Monitor the implementation of the EMMP throughout the project by means of site inspections and meetings. This will be documented as part of the minutes of the site meeting documents.

		• Ensuring project execution within defined budget and timelines • Conducting regular check of the project status and meetings with project team • Provide support and guidance to project team as and when needed. • Project Manager is expected to continually monitor and improve the overall performance of their operation
2	HSE Manager	In addition to the health and safety responsibilities held by staff, managers and supervisors must do whatever is reasonably practical to ensure that both the workplace and the work itself are safe. This includes: • Ensuring that staff are appropriately trained and supervised. • Identifying, assessing, and managing health and safety risks • Consulting with workers (including staff, affiliates, and contractors): 1. Health and safety risk assessments 2. Decisions are made about the measures to be taken to eliminate or control these risks. 3. Health and safety risk assessments • Implementing health and safety risk management programs relevant to their operations, teaching research and consulting functions and work environment • Reporting (to the Human Resources Unit) investigating and responding to all hazards, accidents incidents and taking action to control the risk.

- Assisting with the development, implementation, and maintenance of a return-to-work program for injured staff.
- Be fully conversant with the EIA and conditions of its approval.
- Be fully conversant with the EMMP.
- Be fully conversant with all relevant environmental legislation, policies and procedures, and ensure compliance.
- Convey the contents of this document to the contractor site staff and discuss the contents in detail with the Project Manager and Contractor
- Undertake regular and comprehensive inspection of the site and surrounding areas in order to monitor compliance with the EMMP.
- Take appropriate action if the specifications contained in the EMMP are not followed.
- Monitor and verify that environmental impacts are kept to a minimum, as far as possible.
- Review and approve construction methods, with input from the Site Manager, where necessary.
- Ensure that activities on site comply with all relevant environmental legislation.
- Compile progress reports on regular basis, with input from the Site Manager, for submission to the Project Manager, including a final post excavation audit.
- Liaise with the Site Manager regarding the monitoring of the site.
- Report any non-compliance or remedial measures that need to be applied.
- All environmental problems arising on the construction area will be reported to the Site Manager by the Environmental Manager. Reports on such problems will

be submitted to the Project Manager by the
Manager.

8.2 The Responsible Authority

Impact assessment survey and public consultation sessions held with different stakeholder groups that may be impacted by the established project commencement. The consultation process was carried out in accordance with the guidelines laid by Punjab-EPA. The objectives of this process were to:

- Share information with stakeholders on established project installation and operation.
- Access the impacts on the physical, biological, and socioeconomic environment.
- Understand stakeholder concerns regarding various aspects of the project commencement.
- Find out valuable suggestions by the stakeholders to improve the established project design.
- Understand the perceptions, assessment of social impacts and concerns of the affected people/communities of the project area.
- Find out the awareness level and situation of acceptability to identify any issues for the implementation of the established project.
- Invite people to express their views about the positive/negative impacts on their lifestyles and environment.
- Disclose information about contact offices/officers for any complaints/queries.

It is envisaged, there will be no social impact being foreseen due to the construction and operation of M/S Pyramid Gas Pvt. Ltd. at the established location. Kumharanwali is the nearest community located at 1357 meters distance from the project area. This EIA Report includes all the comments, which were taken into account during the social survey and preparing the definitive development concept for the installation and operation of LPG Storage & Filling Plant.

8.3 Objectives of Consultation

Public consultation plays a vital role in studying the impacts of the established project on stakeholders in successful implementation and execution of the project. It provides an opportunity to exchange knowledge with the beneficiaries and affected parties. Referring particularly to a project related to environmental assessment, involvement of the public is all the more essential, as it leads to better and more acceptable decision-making. The overall objective of the consultation with the stakeholders is to help verify the environmental and social issues, besides technical ones, that have been presumed to arise and to identify those which are not known or are specific to the project. In fact, discourse with many who have thoroughly observed the site conditions in the pre-development phase, goes a long way in updating the knowledge and understanding.

8.4 Identification of Stakeholders

All the people who are directly or indirectly affected or concerned with the project are the stakeholder. Besides the living population of the surrounding areas, some other stakeholders were identified and contacted which enlisted below. They are the key players including shops, public and government offices, schools, university, hospitals, hotels, international agencies and the NGOs. Not only published material, brief or other literature were obtained on request, but also noted their views and the concerns, in an official capacity as well as on the personal basis. Following stakeholders are identified for this project:

Project Affected Persons (PAPs) include the settled families, either property owners or the tenants, businessmen (big, shopkeepers, vendors, etc.), employees of the commercial entities. PAPs are of two types, for instance:

8.5 Direct Stakeholders

No disturbance in the local community is being foreseen due to the installation of the gear manufacturing unit as the distance between the community and the project area is 1357 meters (kumharanwali). No property loss is being envisaged due to the construction of the M/S Pyramid Gas Pvt. Ltd..

6.5.1 Indirect Stakeholders

Indirect impact will occur on those who are living or doing business within a Project Area of Influence (AOI). In the case of the established project, the citizens of nearby kumharanwali will get opportunities of being employed. So, in the early development stages and during the operational phase the people will be benefited due to the installation of the M/S Pyramid Gas Pvt. Ltd..

6.5.2 Other Departments and Agencies

Following departments are related to the project in public consultation:

- ⇒ Government agencies responsible to deal with the project related activities.
- ⇒ Government Agencies directly, indirectly, or widely involved in the execution and monitoring of the established project.
- ⇒ Government departments such as TMA and Planning & Development Department, Forest Department, Agricultural Department, petroleum and working on the other development activities are considered as indirect stakeholders.
- ⇒ Workers of political, cultural, religious, or social scientific bodies, directly or indirectly related to the project.

8.6 Public Disclosure

Public disclosure is the outcome of all such activities where the public is involved at least in the information sharing process. This is an integral part of the process. So, before the proponent applies for NOC to the Punjab-EPA, this disclosure will be distributed properly among all stakeholders. It is the responsibility of the proponent and the consultants to display a public disclosure document in prominent places where community has easy access.

8.7 Consultation Process

Information disclosure, public consultation, and discussion regarding the various aspects of the project with the people of the area are necessary. This process is

intensified during the EIA Studies, and separate rounds of public consultations were held. Surveys were carried out in order to investigate physical, biological and socioeconomic resources falling within the immediate AOI of the project. Primary data collection included:

- Data collection regarding the socioeconomic condition of the study area
- Pre-testing of socioeconomic survey tools in the field
- To consult the locals for collection of information on biological environment

Various meetings with the stakeholders were held the following objectives:

- Share information with stakeholders on the established project and expected impacts on community in the vicinity of the project.
- Understand stakeholders' concerns regarding various aspects of the project, including the existing condition of the upgrading requirements, and the likely impact of construction and operation activities.
- Provide an opportunity to the public to influence the project design in a positive manner.
- Obtain local and traditional knowledge, before decision making.
- Increase public confidence about the proponent, reviewers, and decision makers.
- Reduce conflict through the early identification of controversial issues, and work through them to find acceptable solutions.
- Dissemination of information through discussions, education, and liaison
- Documentation of information narrated by the stakeholders and mitigation measures established by the stakeholders.
- Incorporation of public concerns and their address in the EIA; and eliciting their comments and feedback.
- Create a sense of ownership of the proposal in the mind of the stakeholders.

8.8 Environmental Practitioners and Experts

Officers of government departments, Educational Institutes, Lawyers and NGOs were consulted by the socio-environmental team of the consultants and concerned details about the project were noted down through personal interviews, group meetings, etc., in their offices, for instance.

8.9 Affected and Wider Community

In addition, to the use of direct methods to evince the response of the various stakeholders in the population of the study area was ascertained by conducting a sample survey. Questions posed to the public were related to creation of possible impacts, adverse impacts and beneficial impacts, including employment opportunities, income generation activities, change in living standards and provision of the amenity.

- Disclose the proponent plan of the construction of the established facility.
- To share information on the design and specifications of established project works
- To analyze the expected impact on the socioeconomic environment
- To understand their concerns regarding various aspects of construction and operation

6.9.1 Views, Concerns and Suggestions of Various Stakeholders

Community showed a lot of concerns; a few are being mentioned here:

- Removal of shrubs and trees should be avoided to the extent possible
- The project will become the source of income for local to earn their livelihood easily and honorably.
- The area will become further commercialized.
- For the solid waste management and waste disposal, proper disposal techniques should be adopted.
- Employment opportunities will be generated, and locals should be hired on the priority basis.
- The air pollution is one of the major impacts of the established project, so ambient air quality should be monitored regularly.
- Water spraying/sprinkling should be done on the regular basis during construction phase to avoid dust emissions.

- Good relations with the local communities will be promoted by encouraging Contractor to provide opportunities for skilled and unskilled employment to the locals as well as on-job training.
- The contractor should prefer hiring local labor from adjacent nearby villages.
- Indigenous trees around the facility should be planted to control air pollution and as the compensation.
- Noise reducing barriers should be installed to reduce noise pollution.

8.10 Addressing Public Concerns

The best mechanism of effective communication between the community and the proponent is the by the nomination of the representative of the community and all the issues/concerns must be recorded for future reference. This representative may be the member of the Grievances Redressed Committee (GRC).

a) Grievances Redressed Committee

Grievances Redressed Committee (GRC) will be formulated by the proponent to address the concerns of the locals during the construction phase. The main role of the GRC will be to resolve the issues of the community associated with the established project, if any.

8.11 Acceptance Level of the Project

The opinions of the respondents were noted during the public consultation. The majority of respondents (90%) of Kumharanwali were in favor of the established project. They expect that installation of the unit will also increase the economic value of local assets. According to them the established project will boost the employment opportunities, mobility access to resources and social amenities.

The findings of EIA Report showed that although M/S Pyramid Gas Pvt. Ltd. is expected to have significant negative impacts on the environment during the construction and operational phases, but the severity of these adverse impacts can be reduced significantly by adopting the suggested mitigation measures in EMMP with true spirit. Moreover, their severity can be further reduced by adopting relative mitigation measures as established in the Chapter 5 of this EIA Report. The impacts were assessed by frequent site visits, studying related projects and by reviewing relevant documents. Generally, the project is planned to follow efficient environmental management systems. Specific environmental and social benefits have been mentioned below which depend on the proper application of mitigation measures suggested in EMMP and best engineering practices.

9.1 Merits and Demerits

The major positive impacts include increased job opportunities, business opportunities, and environmental enhancement through tree plantation. The project will raise the income of the persons directly associated with project as well as it will also improve the socio-economic status of the area. In general, potential adverse environmental effects resulting from the established activities will be temporary in nature, short-term and of low magnitude. Through application of standards, recommended mitigation measures, adherence to applicable permit conditions and regulations, adverse impacts can be effectively minimized. The project is not likely to have significant adverse environmental impacts which cannot be mitigated. Negligible negative impacts that are likely occur during construction of building includes air pollution due to movements of vehicles, removal of bushes and shrubs, potential impact to the local water resources and social impacts may affect the locals residing in the nearby community can be foreseen. Mitigation measures will be implemented to minimize environmental impacts though they are still negligible. There are certain mitigations suggested to cater for the aforesaid issues.

Recommendations

9.2

The intensity and severity of impacts occurred due to the established project M/S Pyramid Gas Pvt. Ltd. varies with change in the nature and magnitude of the project as well as depends upon the baseline environmental conditions of the area. The mitigation measures will require constant information flow and consultation with the stakeholders to ensure the least adverse social-economic impact to outweigh the "no project development" scenario.

- ➔ The adverse environmental impacts can be reduced significantly by adopting best management and monitoring practices as well as by implementation EMMP with true spirit.
- ➔ Proper PPEs including aprons, rubber gloves and shoes should be provided to workers.
- ➔ No compromise on public health and environment should be allowed.
- ➔ Waste minimization practices should be introduced to workers by conducting lectures on spot to aware the workers about the long-term benefits of the same in lieu of surrounding environment.
- ➔ A proper tree plantation plan should also be developed in order to make the process environment friendly.
- ➔ Small domestic waste storage bins should be placed at different locations for proper collection and disposal of the solid waste.
- ➔ It is recommended that the Proponent should obtain an Environmental Approval (NOC) from the Punjab-EPA before proceeding further.

GLOSSARY

Agency	A business or organization providing a particular service on behalf of another business, person, or group.
Climate	The weather conditions prevailing in an area in general or over a long period.
Consultant	A person who provides professional advice or services to companies for fee.
Construction Waste	Waste generated from the buildings and construction industry and includes material like bricks, concrete, tiles, debris, ceramics and more.
Demographic	A single vital or social statistic of a human population, as the number of births or deaths.
Ecology	The branch of biology that deals with the relations of organisms to one another and to their physical surroundings.
Endangered species	A species of animal or plant that is seriously at risk of extinction.
Environment	Relationship of natural world (human beings, animals and plants) with physical surroundings (air, land, water).
Excavation	Excavation is the act or process of digging, especially when something specific is being removed from the ground. Archaeologists use excavation to find artifacts and fossils.
Filling Station	A place equipped for servicing automobiles, as by selling gasoline.
Framework	A framework is a real or conceptual structure intended to serve as a support or guide for the building of something that expands the structure into something useful.
Hazardous Waste	Hazardous Waste is waste that poses substantial or potential threats to public health or environment.
Impact	The action of one object coming forcibly into contact with another.

Livelihood	A set of activities involving Securing the basic necessities –food, water, shelter and clothing of life.
Municipal Waste	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.
Nature	The phenomena of the physical world collectively, including plants, animals, the landscape, and other features and products of the earth, as opposed to humans or human creations.
Proponent	A person who advocates a theory, proposal, or course of action.
Rehabilitation	To restore to a condition of good health, ability to work, or the like.
Resettlement	The settlement of people in a different place.
Sanitation	Conditions relating to public health, especially the provision of clean drinking water and adequate sewage disposal.
Stakeholder	A stakeholder is a party that has an interest in a company and can either affect or be affected by the business. The primary stakeholders in a typical corporation are its investors, employees, and customers.
Topography	Topography is the study of the shape and features of the surface of the Earth and other observable astronomical objects including planets, moons, and asteroids.
Vegetation	Plants considered collectively, especially those found in a particular area or habitat.

LIST OF ABBREVIATIONS

AOI	Area of Interest
°C	Degree Celsius
CO ₂	Carbon dioxide
EIA	Environmental Impact Assessment
EIA	Environmental Impact Assessment
EMMP	Environmental Management and Monitoring Plan
EMP	Environmental Management Plan
EPA	Environmental Protection Agency
EPD	Environmental Protection Department
GRC	Grievances Redressed Committee
HSE	Health and Safety Engineer
LPG	Liquefied Petroleum Gas
m ³	Cubic meter
m ³ /h	Cubic meter per hour
MEPCO	Sheikhupura Electric Power Company
NEQS	National Environmental Quality Standards
No.	Number
NOC	No Objection Certificate
NO _x	Oxides of Nitrogen
PEPA, 2012	Punjab Environmental Protection (Amendment) Act, 2012
PEPO	Pakistan Environmental Protection Ordinance
PKR	Pakistani Rupees
PM	Particulate Matter
PPEs	Personal Protective Equipment
QA	Quality Assurance
RO	Reverse Osmosis
SOPs	Standard Operation Procedures
TMA	Town Municipal Authority
WWTP	Wastewater treatment Plant

LIST OF PEOPLE CONSULTED

Name	Fathers' name	CNIC	Concerns/views
Saqib Ali	Riaz Ali	35202-4225635-9	Positive
Muhammad Shabbir Ali	Syed Farooq	35201-6650791-1	Positive
Mohsin Mahmud Dar	Irfan Dar	35202-2607775-3	Positive
Haider Muzaffar	Muhamad Muzzafar	35202-4567566-3	Concerned about Water pollution
Abdul Khurram	Khurram Imtiaz	35202-3483674-5	Concerned about Air pollution
Umar Ali	Faisal Manzoor	35202-2701116-1	Positive
Jawad Ahmed	Muhammad Boota	35202-4202245-7	Positive
Azhar Aziz	Nisar Ahmed	34401-5144918-9	Positive
Behzad Taimur	Muhammad Taimur	38401-6768711-1	Positive
Aslam Pasha	Bilal Pasha	34401-0223636-3	Positive

LIST OF ORGANIZATIONS CONSULTED

Name	Organization	Feedback
Yehab Ahmad	Officer EHS PHP Makhdoom Rasheed	The provision of quality LPG Storage & Filling Plant in affordable prices is necessary for smooth market operations.

Arbaz Shaheen	Production Manager PSO Gas Station	Established project of this unit must be favored It will help in boosting economy of our country.
Mr. Haroon	S.D.O WAPDA	The demand for LPG, locally, is consistently increasing, it will eventually help in handling the higher demand as well as increase employment opportunities and economy of the area.
M. Arshad	Assistant Director EIA EPA, Punjab	Such facility will greatly help in reducing pressure of job availability.

Sources of Data

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- ⇒ <https://www.sciencedirect.com/topics/engineering/denim-fabric>
- ⇒ Demirbas, A. (2002). Fuel properties of hydrogen, liquefied petroleum gas (LPG), and compressed natural gas (CNG) for transportation. *Energy Sources*, 24(7), 601-610.
- ⇒ Raslavičius, L., Keršys, A., Mockus, S., Keršienė, N., & Starevičius, M. (2014). Liquefied petroleum gas (LPG) as a medium-term option in the transition to sustainable fuels and transport. *Renewable and Sustainable Energy Reviews*, 32, 513-525.
- ⇒ Mistry, C. S. (2005). Comparative assessment on performance of multi cylinder engine using CNG, LPG and Petrol as a fuel. *SAE transactions*, 222-226.
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- ⇒ Nayyar, Z. A., Zaigham, N. A., & Qadeer, A. (2014). Assessment of present conventional and non-conventional energy scenario of Pakistan. *Renewable and Sustainable Energy Reviews*, 31, 543-553.
- ⇒ <https://www.geo.tv/latest/375731-pakistan-plans-to-enter-into-long-term-lpg-supply-contracts-with-other-countries>
- ⇒ Field Surveys
- ⇒ Public Consultations

TERMS OF REFERENCE (TORS)**ENVIRONMENTAL IMPACT ASSESSMENT OF M/S PYRAMID GAS PVT.
LTD. AT MOUZA JEVA PURA KALAN, BAGUM KOT ON
SHEIKHUPURA/FAISALABAD ROAD, TEHSIL AND DISTRICT
SHEIKHUPURA.****1.1 PROJECT PROPONENT:**

Farhan Mumtaz S/O Mumtaz Hussain.

1.2 SCOPE OF WORK: CONSULTANT

Preparation of EIA of M/S Pyramid Gas Pvt. Ltd..

1.3 SPECIFIC OBJECTIVES:

The EIA shall be carried out with an objective of identifying environmental impacts during change in Land use of the Master Plan. The specific objectives will be as follows:

- Identification of impacts on physical environment including land, water, and air and suggesting mitigation measures.
- Identification of impacts on biological environment including flora, fauna and natural habitat and suggesting mitigation measures.
- Identification of impacts on socio-economic environment in the vicinity of the established landfill site and suggesting mitigation measure.
- Mitigation measures for potential impacts (Physical, Biological and Socio-environmental)
- Environmental Management and Monitoring Plan/ Contingency Measures

1.4 THE EIA SHALL COVER FOLLOWING MAIN AREAS:

- Background of the project – Justification
- Objectives
- Site locations and mappings
- Complete description of the established sites
- Collection, analysis and presentation of baseline data
- Identification of significant environmental issues
- Assessment of direct, indirect and cumulative impacts on environment
- Mitigation measures to minimize predicted adverse impacts
- Assessment of public perception about established project

- Meeting with the stakeholders and their perception
- Review of the relevant Policies, Legislation and Regulations
- Monitoring plan
- Conclusions

1.5 MAJOR TASKS:

The consultant shall be responsible for undertaking the following tasks in EIA study.

1.5.1 Collection and collation of Secondary Information:

Prior to the start of field activities, available secondary data and reports will be reviewed in detail.

1.5.2 Analysis of Alternative:

Suitable site alternative will be suggested, if required, by the review of relevant maps, available secondary data and legal review.

1.5.3 Location Alternative:

Alternative site will be suggested, if required, by using relevant maps and GPS during area visits.

1.5.4 Management and Operational Alternatives:

Management and operational alternatives will be suggested, if required, by the review of institutional set-ups of departments relevant to the project.

1.5.5 Design Alternatives:

Design alternatives will be suggested, if required, by the review of current design layout.

1.5.6 Review of Relevant Environmental Laws:

The Consultants will carefully review the national/local authority laws, Pakistan Environmental Protection Act 1997, Forest Act 1930, Land Acquisition Act 1874 etc. and international regulations like World Bank Operational Policy, Cites Act etc. for conducting EIA study. This approach will eliminate any

chances of the rejection of the project by the concerned EPA due to the consideration of all the concerned laws during the preparation of the EIA report.

1.5.7 Collection of existing Environmental setting/baseline Data:

Based on the desk study and reconnaissance survey, checklist and questionnaires / Performa's will be prepared for the baseline surveys. Consultants will proceed to the site and the collection of primary data /database on the environmental aspects will be done, which includes the following:

1.5.8 Physical resources:

Physiographic, topography and soils, atmosphere, climate, hydrology, surface water, ground water, geology, seismology etc including environmental monitoring and testing.

1.5.9 Environmental Monitoring:

In case of the absence of updated data, one-time limited environmental monitoring will be conducted in order to assess and analyze the existing level of particulate and gaseous emissions, potable water and liquid from any existing sources lying within the Study Area.

The environmental monitoring and testing will be carried out through EPA approved Environmental Laboratory.

1.5.10 Ecological resources:

Identification of the number of tree species present in the project area, as well as, determination of tree density and area covered by them. Tree counting and their identification along with other vegetation and crops, if any, will be done by making field visits, and by the review of the available literature relevant to the study. Information about the flora and fauna of the area will be collected. Information of the type of the livestock in the area will be noted along with their density.

1.5.11 Socio-economic survey:

Data on social and cultural conditions of the study area will be collected. Determination of the population density in the study area will be done by the

review of district census report. The social survey also includes Land acquisition survey (if required) and Identification of vulnerable people/groups i.e. Project Affected People, if any. Data about population density, Infrastructure (electricity, sanitation/ drainage facilities, mode of transportation), health and education status will be collected. Data collection about number of schools and hospitals in the area, if any; no. of graveyards in the area, if any; no. of recreational and commercial areas, if any; availability of utilities; and strata of socio-economic group of people dominant in the area will be kept in focus during baseline study.

1.5.12 Evaluation / Identification of Potential Impacts:

Prediction and assessment of the established Project's likely negative impacts during the construction and operational stages will be carried out by conducting the field visits of project and study area. The impacts will be discussed in three sectors with reference to the following parameters:

1.5.13 Physical environment:

Under physical environment, impacts on following areas will be measured.

- **Land resources:** Evaluation of the environmental effects of the project on land use in the immediate vicinity of the project (i.e. within the identified boundaries of the project) will be done, e.g. Agriculture, Archaeological, Historical and Cultural monuments
- **Water resources:** Precipitation, surface water resources, ground water resources.
- **Air quality:** levels of air pollutants like particulate matter, CO and other parameters and their adverse impacts, if any, on the surrounding environment will be determined to evaluate its effects.
- **Noise levels** will be evaluated for the construction and operational phase of the project

1.5.14 Ecological environment:

Impacts on ecological environment may include

- Impacts on fauna of area, livestock and migratory birds (if any)
- Reserved forests, if any.
- Relocation/resettlement issues etc.
- Impacts on flora

1.5.15 Socio-economic Impacts:

- Impacts on livelihood of Project Affected Persons (PAPs) (if any):
Questionnaires will be developed and prepared and filled during the field visits to know about the public perception of the study area.
- Impacts on social settings of the project area.
- Relocation/ resettlement issues
- Impacts of the project on local property values and insurance rates will be taken in to consideration.
- Disruption archaeological, historic, religious, and unique natural values in the project area if any

1.5.16 Suggested Mitigation/contingency Measures:

After the identification of the adverse environmental impacts, necessary mitigation measures would be established. Mitigation plans will be established based on the intensity of each impact. For instance, if the impact is low enough, it may be ignored; if the impact is high, specific mitigation measures will be recommended/suggested and if the impact is medium, it may need some mitigation measures or simply be monitored/managed properly in order to ensure that it remains within the acceptable limits.

1.5.17 Environmental Management Plan (EMP):

An Environmental Management Plan (EMP) will be developed. EMP will propose a plan of action that will indicate the responsibilities and required measures to minimize the negative environmental effects of the project at different stages.

Under the EMP, institutional set up will be studied and the required enhancement, which is deemed necessary for effective management and monitoring of the environmental activities, will be established. The EMP will address the following aspects:

- Organizational structure and responsibilities;
- Mitigation Plan;
- Environmental Monitoring Plan;
- Communication and documentation;
- Training of Staff;
- Environmental Cost;

1.5.18

Stakeholder participation and consultation:

Consultation is required at least during two stages of the EIA process as follows:

- During the process of the EIA Study and report preparation, the public is consulted through meetings, seminars, or workshops. Proponents will hold public meetings and/or open houses in local communities to describe the details of the project and to receive feedback on potential issues, interests or concerns related to the project. Engagement may also include informal discussions with landowners and nearby residents and meetings with community associations, businesses, municipal councils, regional planning agencies, public interest group's communities.
- Once the draft EIA report has been prepared & submitted then public hearing is required. The consultants shall fully assist the Client in the public hearing, including furnishing the replies/information to the questions/issues raised during the hearing.

1.5.19

Deliverables Consultant:

1. Complete Draft EIA report featuring all the development sites. The EIA report shall be completed in respect of baseline data, detail socio and environmental impact assessment, Environmental Management Plan and Alternatives considered.
2. Final EIA Report to be submitted after receiving comments from Clients.

1.6

Time Duration:

The time duration for completion of whole study is 2 months.

1.7 SCOPE OF WORK; Client:

The client has following scope of Work

1. Give all data related to the current and established Land use of the sites.
2. Give all the detail maps of the sites.
3. Give coordinates of all the sites
4. Give detail description of the area.
5. Land use Study for the sites.
6. Arrange Stakeholders consultation along with Consultants
7. Submission of EIA report in EPA and its follow-up until award of NOC.

PROJECT TEAM AND RESPONSIBILITIES

Expert	Position held	Highest Qualification	TERM OF REFERENCES
Mr. Kamal Ahmed	Chief Environmentalist	M. Phil. Environmental Economics, PIDE, Islamabad	Mr. Kamal would be responsible for: ❖ Environmental Assessment & Management. ❖ Supervision of monitoring team for air water noise and soil analysis. ❖ Preparation of technical EMP
Mr. Shahzaib Ahmed	Social Scientist	M. Phil Development Studies, PIDE, Islamabad.	Mr. Shahzaib would be responsible for: ❖ Detailed social survey of project sites ❖ Social impact assessment
Mr. Arslan Iqbal	Environmentalist-2	MPhil Environmental Sciences, UOL	Mr. Arslan would be responsible for: ❖ Biodiversity assessment ❖ Detailed flora fauna survey of project sites ❖ Identification of threaten and endangered species ❖ Project impacts on flora and fauna ❖ Detailed social survey of project sites ❖ Social impact assessment ❖ Consultation with stakeholders

Amna Hafeez	Environmentalist-3	M.Sc. Mountain Conservation and Watershed Management, University of the Punjab	Ms. Amna would be responsible for: ❖ Report writing ❖ Field surveys and consultation with stakeholders ❖ Preparation of Environment monitoring plan ❖ Preparation of technical EMP ❖ Identification of sensitive receptors ❖ Capacity building & training ❖ Conducting and monitoring of health assessment surveys ❖ Environment health risk assessment and management ❖ Detailed survey of project sites ❖ Environmental Assessment ❖ Social Assessment
Rahma Butt	Environmentalist-4	BS (Hons) Environmental Science, Lahore College for Women University.	Ms. Rahma would be responsible for: ❖ Detailed flora and fauna survey of project sites ❖ Site Monitoring ❖ Socio-Economic survey & analysis ❖ Report Writing
Saba Nazir	Environmentalist-5	M.phil Environmental Sciences, UOL	Ms. Saba would be responsible for: ❖ Site Monitoring ❖ Socio-Economic survey & analysis

			❖ Risk Assessment (OHS & EMP) ❖ Report writing
Astah Mushtaq	Environmental-6	M S Environmental Sciences, LCWU	Ms. Saba would be responsible for: ❖ Risk Assessment (OHS & EMP) ❖ Report writing