EIA/2025

CONSTRUCTION OF LPG STOARGE AND FILLING PLANT
BY
M/S HAFIZABAD LPG (PVT) LIMITED

Mouza Solangi Awan on Hafizabad Pindi Bhattian Road, Tehsil and District Hafizabad

Mr. Gul Nawaz
(CEO)

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LIST OF ABBREVIATIONS

CO_2	Carbon dioxide
dB(A)	A weighted decibel scale
EIA	Environmental Impact Assessment
EMP	Environmental Management Program
Engr.	Engineer
EPA	Environmental Protection Agency
ETP	Effluent Treatment Plant
IEE	Initial Environmental Examination
Ltd.	Limited
M/S	Messrs
m^3	Cubic meter
m^3/h	Cubic meter per hour
No.	Number
NOC	No Objection Certificate
NO_x	Oxides of Nitrogen
PEPA, 2012	Punjab Environmental Protection (Amendment) Act, 2012
PEQS	Punjab Environmental Quality Standards
PKR	Pakistani Rupees
PM	Particulate Matter
PPEs	Personal Protective Equipment
Pvt.	Private
SOPs	Standard Operating Procedures
SO_x	Oxides of Sulfur
WAPDA	Water and Power Development Authority

EXECUTIVE SUMMARY

Title and Location of Project

The main findings of Environmental Impact Assessment (EIA) Report are summarized in this section for the construction of **LPG storage and filling plant** under the name of **M/S Hafizabad LPG (Pvt.) Ltd.** situated at Khewat No. 14/13, Khatooni No. 45 to 47, Khasra No. 100/1, 128 151, 152, 153, 155, 166, 99/2 at Mouza Solangi Awan on Hafizabad Pindi Bhattian Road, Tehsil and District Hafizabad. The land coordinates of project site are longitude **32°04'17.5"N** and latitude **73°38'44.2"E.**

Proponent Details

The details of the proponent are as follow:

Proponent Details	
Proponent Name	Mr. Gul Nawaz
Company	M/S Hafizabad LPG (Pvt.) Ltd.
Office Address	Fazal Qadir Filling Station PSO kasoki road, hafizabad near kasoki chowk bypass road, Hafizabad
Contact #	0300-4686595

Copy of proponent's CNIC is attached as **Annex A**

Name of Consultant

M/s Ecogreen Company (Pvt) Ltd. has been engaged for conducting EIA Study of the above stated project. The main objectives of the said project are to establish baseline environmental conditions, identify potential environmental impacts and to suggest suitable mitigation measures accordingly.

A brief outline of the proposal (type, process, technology and land requirement)

As per discussion with EIA Section of EPA Punjab under the provisions of the Punjab Environmental Protection Review of Initial Environmental Examination and Environmental Impact Assessment 2022 said project has been categorized under **Category A (5): "Oil and gas extraction projects including exploration, production, gathering systems, separation and storage"** of the projects mentioned in **Schedule II.**

Construction of **LPG storage and filling plant** under the name of **M/S Hafizabad LPG (Pvt.) Ltd.** is proposed within the premises of proponent's owned land. The project will facilitate distribution / supply of environment friendly fuel (LPG) to consumers for commercial, residential and industrial purposes. The main component of aforesaid plant will be two storage tanks having capacity to store **50 tons LPG each** (**total capacity 100 tons)** while the filling capacity of plant will be **20 Metric tons/day**. The total area designated for construction of LPG storage and filling plant is approximately **70400 Sq.Ft.** Total cost of the project is approximately **PKR 180 million.**

Salient Features of Project

Project Title	Construction of LPG storage and filling plant
Purpose of Project	To facilitate consumers by providing environment friendly fuel i.e. LPG which will used for commercial, residential and industrial

	purposes. Also this project will lead to socioeconomic uplift of the proponent, locals and other stakeholders..
Site Coordinates	Longitude **32°04'17.5"N** and latitude **73°38'44.2"E.**
Total Area of Unit	**70400 Sq.Ft.** approximately
Covered Area	**4834 Sq.Ft.** approximately
Open Area	**65566 Sq.Ft.** approximately
Raw material	Liquefied petroleum gas (LPG)
Cost of the Project	Approximately 180 Million PKR
Environmental Budget	0.5 Million PKR
Proponent Name	Mr. Gul Nawaz
Consultant Name	Ecogreen Company (PVT) Ltd.
Tree Planation	Trees will be planted along the boundary of Project Area.
Water Source	Groundwater
Water Requirement	Instant project will require water for domestic usage and for water tank built to be used in emergency case like fire incident
Wastewater	Domestic wastewater will be generated during constructional and operational phases which will be treated in septic tank and used for horticulture practices while the excess would be discharged into drain.
Air Emissions	Only dust emissions will generate during construction of the instant project while during operational phase air emissions from generator will release into the air that will be controlled through proper maintenance of generator
Solid Waste	Constructional and domestic solid waste will generate during construction phase while only domestic solid waste will generate during operational phase. This solid waste will be disposed off as per area of practice.
Power source	WAPDA and generator
Storage and Filling Capacity	100 tons storage capacity and 20 metric tons/day filling capacity
Manpower/Staff	10-15 persons during construction phase, 8-10 approximately during operation phase

Major Impacts and Recommended Mitigation Measures

In order to identify all the impacts associated with the project having potential to cause adverse environmental impacts, a thorough review has been conducted. Although, there are no chances of any adverse impacts on the surrounding environment if plant is established as planned, however, in case of any impacts arising during construction and operations possible necessary mitigation measures will be adopted to control the same. Overall, the project has positive social and environmental impacts. The project may also have some adverse environmental impacts of minor to moderate magnitude and mostly temporary in nature,

which can be controlled through adequate mitigation measures, proposed in Environmental Management and Monitoring Plan (EMMP). Moreover, no vegetation clearance during construction of LPG storage and filling plant will be done as the instant project is proposed to be constructed on proponent's owned land. However, plantation is planned to be done along the boundary of project site.

Proposed Impacts and their Mitigation Measures

Environmental Parameters	Impact Assessment during Different Phases		Mitigation Measures
	Construction	Operational	
Planning and Designing			
Location	**-1p**	**+2p**	Instant project will be established on proponent's owned land. ❖ Domestic wastewater will be generated that will be treated through septic tanks and discharged into nearby drain. ❖ The solid waste generated by work force will be collected and disposed of as per area of practice. ❖ It is envisaged that no land use change, tree cutting or deterioration of soil and environment will take place and no further mitigation measures will be required as the project will be established on proponent's owned land.
Design	**+1t**	**+1p**	No mitigation measures will be required as the project is designed according to the principle of sustainable development; ❖ For instant project, state of art LPG storage and filling plant will be constructed that will generate no harmful air emissions

			❖ Similarly no procedural solid waste or wastewater will generate from the plant
A: Physical			
1. Land Resources			
Soil Erosion and Contamination	**-1t**	**+1p**	Following mitigation measures will be adopted to protect the soil from erosion and contamination: ❖ As the instant project is to be established on the proponent's owned land, no tree cutting or deep excavation is required and hence there is negligible chances of soil contamination and loss of vegetation. ❖ It will be ensured that fast-growing trees will be planted in the designated green areas.
Solid Waste	**-1t**	**+1p**	General waste management practices will be adopted which will include: ❖ During establishment, construction waste will be reused or handed over to the contractor. ❖ During operation phase all of the generated domestic solid waste will be collected and disposed of as per area practices.
Land Use	**NA**	**+1p**	Construction of LPG storage and filling plant will be done on proponent's owned land. Hence, no impact due to the land use change is being envisaged. Following mitigations measures will be adopted to reduce the land use

			impact: ❖ Unnecessary up-rooting and disturbance to the native vegetation should be avoided up to the extent possible ❖ The designated green area will be vegetated and vegetation present on-site will be preserved as far as practically possible.
2. Air Resources			
Dust and Gaseous Emissions	**-1t**	**+1p**	Following measures will be adopted: ❖ Workers will be given adequate PPEs such as face masks. ❖ Regular monitoring of leakage of valves/equipment will be done ❖ The vehicles used for transportation construction materials/ final product will be kept properly maintained and tuned. ❖ The generator used will be sound proof and canopy type generator ❖ The trucks carrying the construction material will be ensured covering by tarpaulin to reduce fugitive dust emissions. ❖ Water spraying/sprinkling on unpaved tracks would be done on the regular basis during establishment. ❖ Ensure that high quality fuel having low sulfur contents will be used in

			the vehicles engaged in the project activity ❖ Ensure that dust emission generated due to vehicular movement is minimized by restricting speed limit in andaround the plant to minimize impacts through good traffic management at site. ❖ Adequate parking and unloading space will be provided as per layout plan to ensure smooth traffic and zero chances of congestion ❖ Ensure that dust emission during the project activities will be minimized by implementing best management practices. ❖ Environmental Monitoring be conducted through In-house equipment and third-party EPA Certified Labs.
3. Water Resources			
Ground Water	**-1t**	**-1p**	Following mitigation measures will be adopted: ❖ Water conservation techniques would be adopted to ensure sustainable consumption for domestic usage ❖ Monitoring of groundwater shall be carried out as per provision of Self-Monitoring and Reporting (SMART) Rules to ensure compliance with the PEQS.

Surface Water	**NA**	**NA**	No mitigation measures are required to be discussed as the project does not extract from any surface water body.
Wastewater	**-1t**	**-1p**	Following mitigation measures will be adopted: ❖ Monitoring of effluents shall be carried out as per requirement of SMART Rules to ensure compliance with the PEQS ❖ It will be ensured that no solid waste will be entered in the wastewater ❖ The treated domestic wastewater will be discharged into nearby drain.
B : Ecological			
Flora			
Tree Cutting	**NA**	**+1p**	Following mitigation measures will be adopted: ❖ Avoid un-necessary disturbance and removal of the tree at any stage of the project. ❖ The designated green area will be vegetated and native vegetation present on-site will be preserved.
Fauna			
Terrestrial Fauna	**NA**	**NA**	There is no sensitive or protected area in proximity of which may be affected by the project. Hence no mitigation measures will be required as no impact on fauna is being envisaged.
C: Socio-Economic			

Employment Opportunities	**+1t**	**+2p**	It will be ensured that preference will be given to the locals during construction and operation of the instant project.
D: Hazards			
Physical Hazards	**-1t**	**-1p**	The following mitigation measures are suggested that could be applied to reduce the risk of health and safety: ❖ Standard Operating Procedures should be adopted and it should be implemented effectively. ❖ Floor surfaces shall be maintained and cleaned on regular basis. ❖ The effective use of hearing- protection devices and googles shall be ensured. ❖ Protective measures and emergency rescue procedures should be followed strictly. ❖ The electric equipment must be properly earthed to avoid electric shock. ❖ Detectors would be installed to monitor any leaks from tanks or pipelines, valves etc..
Health and Safety	**-1t**	**-1p**	The following mitigation measures are suggested that could be applied to reduce the risk of health and safety: ❖ The effective use of hearing- protection devices shall be ensured. ❖ Protective measures and emergency rescue procedures should be followed strictly ❖ Only authorized persons

			shall be allowed in the processing areas. ❖ Adequate PPEs shall be provided to the workers during construction and operation. ❖ First Aid boxes shall be placed at different locations within the mill. ❖ Proper Firefighting and emergency evacuation plans will be developed. ❖ Emergency exits and assembly areas will be clearly marked. ❖ Safety instructions will be displayed at conspicuous locations within the production area. ❖ Training would be provided to workers for safe execution of operations
Legends: 1= Low; 2= Medium; 3= High; 4= Extremely High; NA= Not Applicable; t=Temporary; p= Permanent			

Proposed Monitoring

During construction & operation, monitoring will be carried out to check compliance of PEQS. Moreover, periodic monitoring should also be carried out regarding ambient air monitoring, noise pollution, wastewater & worker safety. A detailed site monitoring plan has been developed and given in **Chapter-09** of this EIA Report.

CHAPTER 1: INTRODUCTION

1.1. Purpose of Report

As per Punjab Environmental Protection Act, 1997 (Amended 2012) and the Punjab Environmental Protection Review of Initial Environmental Examination and Environmental Impact Assessment 2022, it is mandatory for the proponent of any development project to obtain Environmental Approval/NOC before constructing the plant from EPA Punjab by filing an IEE or EIA as the case may be, before the Agency. This Report presents the Environmental Impact Assessment (EIA) Study for the construction of LPG storage and filling plant under the name of M/S Hafizabad LPG (Pvt.) Ltd.

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 of the said 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 and Monitoring Plan (EMMP) for implementation of the project in environment-friendly manner. This EIA Report provides relevant information, as required under the officially approved format, to facilitate the decision makers i.e. EPA Punjab for the issuance of Environmental Approval/NOC. The main objectives of this EIA Study are:

- To determine and document the state of environment of the project area to establish a baseline environmental condition in order to assess the suitability of said project in respective area.
- To identify the impacts during construction & operation activities
- Provide assistance to the proponent for planning, designing and implementing the project in a way that would strengthen environment, improve ecological resilience, eliminate or minimize the negative impact on the bio-physical and socio-economic environment and maximizing the benefits to all parties in cost effective manner.
- To present Mitigation and Monitoring Plan to smoothly implement the suggested mitigation measures and supervise their efficiency and effectiveness.
- To provide opportunity to the public for understanding the project and its impacts on the community and their environment in the context of sustainable development.
- Prepare an EIA Report for submittal to the Environmental Protection Agency, Punjab for according Environmental Approval.

1.2. The Project

The proposed project for which impact assessment study is being carried out is entitled as “construction of LPG storage and filling plant” under the name of M/S Hafizabad LPG (Pvt.) Ltd” at Khewat No. 14/13, Khatooni No. 45 to 47, Khasra No. 100/1, 128 151, 152, 153, 155, 166, 99/2 at Mouza Solangi Awan on Hafizabad Pindi Bhattian Road, Tehsil and District Hafizabad.

1.3. The Proponent

The details of the proponent of said project are given below:

Table 1: Details of the Proponent

Proponent Details	
Name	Mr. Gul Nawaz
Company	M/S Hafizabad LPG (Pvt.) Ltd.
Office Address	Fazal Qadir Filling Station PSO kasoki road, hafizabad near kasoki chowk bypass road, Hafizabad
Contact #	0300-4686595

1.4. Details of Consultant

The proponent of said project engaged M/s Ecogreen Company (Pvt) Ltd. to carry out the environmental impact assessment study of aforesaid project in accordance with EPA, Punjab guidelines. For this purpose, the company engaged the group of professionals which comprises of Environmental Scientists and Environmental Engineers. The details of the consultant are given below.

Table 2: Consultant Details

Consultant Details	
Consultant	**M/s Ecogreen Company (Pvt) Ltd.**
Address	2nd Floor, Plot # 7A, Commercial Area, Canal View Housing Society, Lahore
Contact No.	042-35294298 042-32355915
Focal Person	
Name	Dr. Areej Tahir
Designation	*Associate environment professional*
Contact No.	0370-4178838

To prepare an EIA Report of the respective project the company engaged the following experts. The details of the experts are given below

Table 3: List of Experts

Sr. #	Name	Qualification
Team Leader		
i.	Dr. Areej Tahir	Ph.D. Environmental Sciences
Environmental Scientist		
ii.	Ms. Kiran Irshad	M.Phil. Environmental Sciences

1.5. Project Nature, Size & Location

Nature: The proposed project is the construction of **LPG storage and filling plant** under the name of **M/S Hafizabad LPG (Pvt.) Ltd.** The project will facilitate consumers to use environment friendly fuel (LPG) for commercial, residential and industrial purposes.

Size: The total area designated for construction of LPG storage and filling plant is approximately **70400 Sq.Ft** having two storage tanks of **50 tons capacity each** while the filling capacity of plant will be **20 Metric tons/day**.

Location: The location for the construction of said project is Khewat No. 14/13, Khatooni No. 45 to 47, Khasra No. 100/1, 128 151, 152, 153, 155, 166, 99/2 at Mouza Solangi Awan on Hafizabad Pindi Bhattian Road, Tehsil and District Hafizabad. The geographical location of the said project is **32°04'17.5"N** and **73°38'44.2"E**. The total demarcated project area is given below;

Figure 1. Project location

CHAPTER 2: SCREENING

Section 12 of Punjab Environmental Protection Act (PEPA), 1997 (Amended 2012) 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 2012) and Punjab Environmental Protection (Review of Initial Environmental Examination and Environmental Impact Assessment) Regulations 2022, the project "construction of **LPG storage and filling plant** under the name of **M/S Hafizabad LPG (Pvt.) Ltd.**" falls under ***"Schedule II"*** *Category* ***A*** *Clause* ***5 – Oil and gas extraction projects including exploration, production, gathering systems, separation and storage.***

CHAPTER 3: SCOPING

3.1. Spatial and Temporal Boundaries of Environmental Assessment

The efficient operation of the plant will make sure to not disturb the ecosystem at any level and if there are any impacts, the proper remedial measures will be taken. The employment opportunities for the locals will be increased and so will the GDP of the country. The process itself has low impacts on the environment. The LPG would be stored in tanks at the plant and sold out to stakeholders. The Google Earth Map (**Figure 1**) attached shows the aerial distance of project site with nearby facilities like educational institutes, hospitals, residential areas etc. Overall, no significant impacts can be seen over the longer run as proper management plan has been devised and will be implemented to cope up with any adverse effect. The impacts on socio economic factors and environmental parameters will be keenly observed throughout the life of project.

The aim of the project is to meet the fuel demand in the market and to promote the use of green and clean energy sources.

3.2. Important issues and concern raised during consultation

During consultation it was observed that majority of the respondents were in favor of said project. The other related issues and concerns raised by general public are discussed in detail in **Chapter 10** (Stakeholder Consultation). However, during the social survey following concerns of the local community were noted:

- Nuisance must be controlled at source.
- Latest/State of the art technology must be used.
- Locals should be preferred for the job opportunities.
- Environmental monitoring should be done on regular basis as per SMART Rules.
- Solid waste should be managed effectively by adopting the standard practices of the area.
- Cleanliness of the area should be maintained.
- An effective EMMP should be designed and enforced with true spirit.
- Health and safety of the workers should be ensured.
- Proper disposal of sewage should be ensured
- Operations must be carried out at daytime
- Air emissions must be controlled on site using pollution control equipment

3.3. Significant Impacts and Factors to be Determined

Main impacts and factors to be determined are;

- Occupational Health and safety
- Site Security
- Traffic Management
- Job opportunities for locals

- Energy efficient techniques must be adopted
- Proper site restoration after Establishment
- Tree plantation at designated green areas
- Emergency preparedness

CHAPTER 4: CONSIDERATION OF ALTERNATIVES

4.1 Site Alternatives, their selection and rejection criteria

No site alternative was considered for the aforesaid project construction and operation. The selection of current location was done due to the following conditions:

- The proponent owns the project site and the proponent wants to construct LPG storage and filling plant on this land (**Annex B**).
- The location of LPG storage and filling plant is at safe distance from nearby residential communities
- The proposed location has adequate road access for ingress and egress of vehicles.
- The LPG storage and filling plant would create less impacts on air quality as no procedural emissions are expected from the plant
- Utilizing the owned land reduces capital expenditure associated with land acquisition, site development, and infrastructure investment, leading to overall cost savings for the project.
- No national park or wildlife habitat falls within 10 km radial distance from proposed project site.
- The site is not dangerous for public safety.
- No endangered fauna/flora has been observed near the project site.
- The proposed site does not fall in any category of protected or environmentally sensitive area.
- The location of project is best suited for proposed activity.

No important religious, archaeological, recreational site declared protected area and human settlement exists within close proximity of the selected site i.e., within 500 m which is considered to be a safe distance. In view of these facts, it can be concluded 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.

4.2 Design/technology alternatives, their selection and rejection criteria

Construction of LPG storage and filling plant will be designed in line with contemporary environmental standards and regulations, while new techniques will be continuously incorporated into the design and technology where applicable.

4.3 Environmental Alternatives, their selection and rejection criteria

The construction of LPG storage and filling plant is expected to create low impacts on surrounding air quality as the LPG fuel is cleaner energy source with no harmful emissions expected from this plant. Moreover, plantation will minimize the emissions from vehicles and generator by controlling its spreading in surrounding areas, thereby contributing positively to the regional environment.

The execution of the instant project will minimize the burden on solid waste during operational phase as only domestic solid waste will be generated. Moreover, no procedural wastewater will be generated from the construction of LPG storage and filling plant, only domestic waste water will be generated which will be treated in septic tank before using for horticulture purposes and discharging into nearby drain.

4.4 Economic Alternatives, their Selection and Rejection Criteria

Instant project involves up to date equipment and process ensured by management that process will be economically more stable. Moreover, the use of LPG would create less burden on polluting fuel sources like coal, firewood, kerosene etc. and promote sustainable practice.

CHAPTER 5: DESCRIPTION OF PROJECT

5.1 General

This section of the study concentrates on details of the project and its salient features; such as; location, site layout, objectives, cost and magnitude of operation and various phases have also been examined as a response to possible environmental concerns.

5.2 Project Objectives

The overall aim of instant project is:

- ✓ To meet the increasing demand of LPG fuel in the market.
- ✓ To reduce dependency on traditional fuels such as firewood thereby promoting cleaner energy usage
- ✓ To reduce greenhouse gas emissions by offering LPG as a cleaner alternative to biomass and fossil fuels
- ✓ To improve energy accessibility, enhancing living standards and economic activities.
- ✓ Socio-economic uplift of the proponent

5.3 Location and Site layout of Project

The location for the construction of said project is Khewat No. 14/13, Khatooni No. 45 to 47, Khasra No. 100/1, 128 151, 152, 153, 155, 166, 99/2 at Mouza Solangi Awan on Hafizabad Pindi Bhattian Road, Tehsil and District Hafizabad. The geographical location of the said project is **32°04'17.5"N** and **73°38'44.2"E.** The site layout is attached herewith as **Annex-C**. However, the Google Earth Map showing the project location and its distance from nearby sensitive receptors is shown further.

5.4 Land Use On-Site

The selected site is open land owned by proponent which is surrounded by agricultural fields as shown in the figures below.

Figure 2: Land use pictures for the said project

5.5 Nearby Residences

The instant project is located at a safe distance of **0.54 km and 1.24 km** to nearby residential areas known as **Solangi Awan** and **Qila Ram Kou,** respectively.

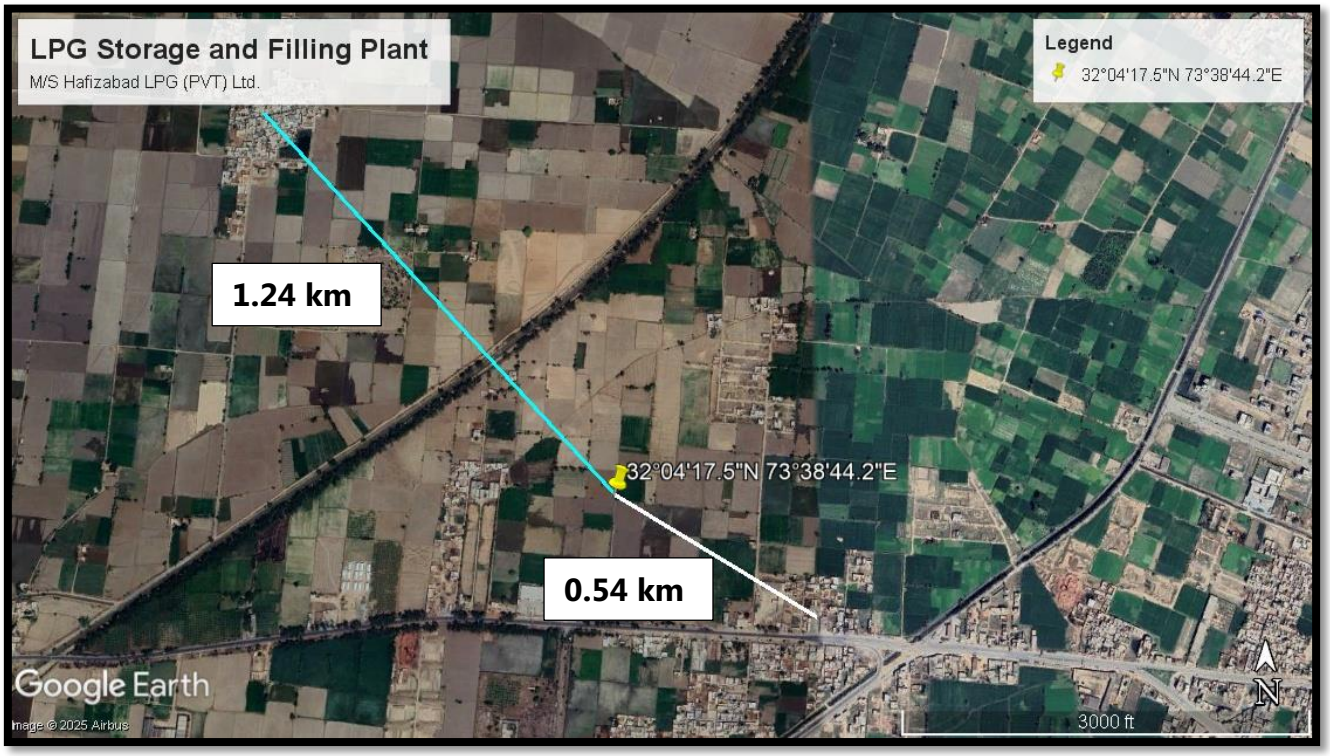


Figure 3. Nearby residential areas

5.6 Road Access

The project can be accessed by Jalalpur Bhattian Road from a distance of **0.29 km.** This road also connects to nearby communities including Hafizabad city.

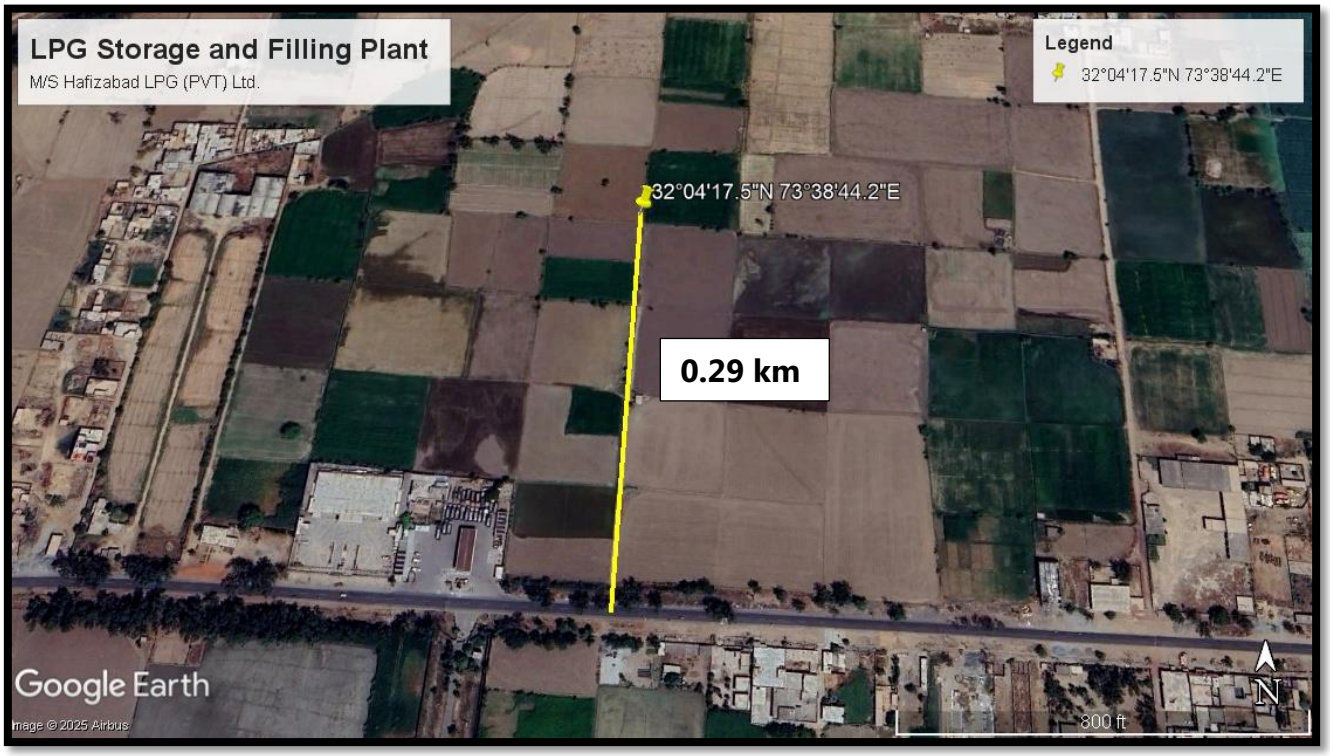


Figure 4. Road access

5.7 Vegetation Features

The topography of the project area is flat and it is open land with herbs & shrubs species. Instant project involve uprooting of herbs, shrubs present on site. Moreover, tree plantation will be done along boundary & in all open spaces after construction of LPG storage and filling plant.

5.8 Cost and Magnitude of Operation

The cost of the said project is approximately **PKR 180 million** it includes; land purchase, civil work, purchase & installation of machineries/equipment etc. The magnitude of operation includes:

Table 4. Cost breakdown

Value Capitalized for Construction of LPG Storage and Filling Plant (PKR)	
Building cost and land cost	60 million
LPG tank and cylinders cost	45 million
Fire fighting equipment cost	10 million
Electrical equipment cost	17 million
LPG equipment cost	20 million
Construction and engineering cost	17.5 million

Environmental budget	0.5 million
Licensing fees	10 million
Total cost	**180 million**

5.9 Schedule of Implementation

The tentative schedule for said project implementation is approximately **6 months** and the detail timeline of the construction period is given in **Table 4:**

Table 5. Timeline for Project Development

Sr#	Activities	3 Month			3 Month		
		4W	*6W*	*12W*	*5W*	*8W*	*12W*
1	Detailed Designing						
2	Mobilization of Contractors						
3	Building Renovation						
4	Site Restoration & Rehabilitation						
5	Plantation at Site						
6	Commissioning						
W=Weeks							

5.10 Description of Project

The said project is construction of **LPG storage and filling plant** under the name of **M/S Hafizabad LPG (Pvt.) Ltd.** having storage capacity of **100 tons** and filling capacity of **20 metric tons/day**. Total area for of the project site is **70400 Sq.Ft** and the cost of the project is **180 million** for instant project.

5.11 Project Process

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 (C3H8). LPG is used as fuel for cooking and heating as a replacement of conventional fuels like coal, firewood, kerosene, dung cake etc, in rural, peri-urban and the northern areas of Pakistan. It is also used as fuel in vehicles particularly taxi and Rickshaws.

LPG storage and filling Plant will setup a bottling plant with 2 storage tanks (50 tons of storage capacity each) and filling dispensers (20 Metric tons capacity). The facility will hold a certain quantity of LPG quota, allocated by one of the LPG producers and this allocated LPG will be supplied through Bowser (gas supplying trucks). This LPG will be stored in storage facility, from where supply to the sub-distributors will be made. Sub-distributors will bring their

cylinders, get them filled and store them at their location, from where they are distributed among households and commercial users i.e., hotels etc.

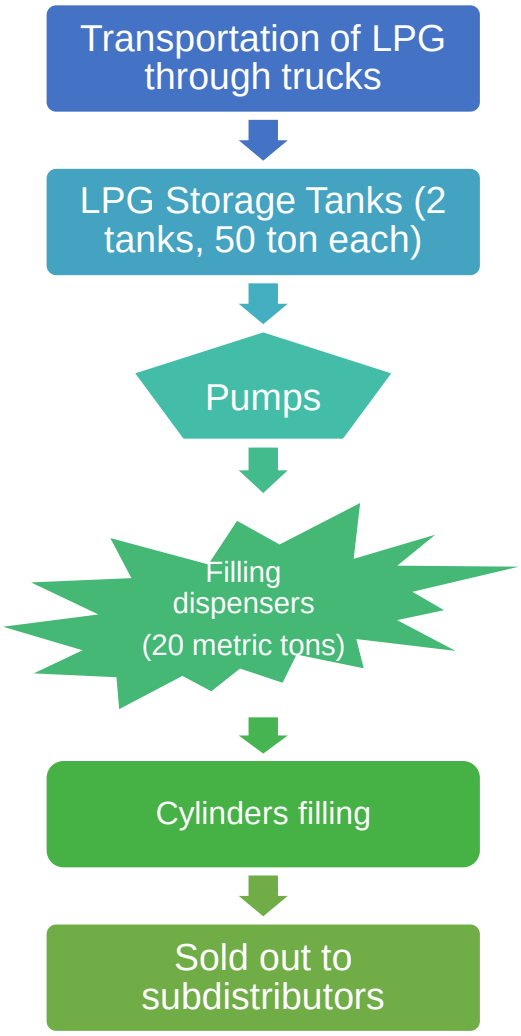


Figure 5. Process flow diagram

Components of the plant

The LPG storage and filling plant will comprise of following components:

Storage tanks

The LPG will be stored in the airtight storage tanks made up of stainless steel having one coat of red oxide primer and two coats of white enamel paint. There will be 2 storage tanks of 50-ton capacity designed according to ASME standard (section 8, Div 1). The total capacity of the storage will be 42.50 tons at 85% capacity. The LPG will be stored 65.5°C temperature and 250 PSI pressure. The length and diameter of the storage tanks will be between 10718 mm and 3490 mm, respectively. A retaining wall of 3 ft tall will be constructed 10 ft apart to

the storage tanks. The storage tanks will be constructed according to the standards prescribed for the issuance of the OGRA License and ASME standard.

LPG pump and compressor

LPG pump will transfer liquid between storage tanks, filling stations, and tankers while the compressor will prevent gas loss, enhance safety, and ensure efficient operations. The pump would be rotary vane or gear pump having flow rate of 36-48 m^3/hr with 8-12 bar discharge pressure and 1450-1750 RPM. The compressor would have capacity of 100-150 m^3/hr, 10-14 bar discharge pressure and suction pressure of 1-3 bar. The power of both pump and compressor would be 22KW (30 HP).

List of machineries/accessories

Following is the list of machineries/accessories required in the construction and operation of LPG storage and filling plant:

Table 6. List of equipment/machineries

Sr#	Machineries/equipment	Sr#	Machineries/equipment
1	2 LPG pumps	8	Ball valve
2	Compressor	9	Strainer
3	Hydrants	10	Actuator
4	Electrical panels	11	Flange
5	Generator (150 KVA)	12	PV sensor
6	Fire monitor	13	Water sprinkler
7	Lightening arrestor		

5.12 Supplies

Following supplies will be utilized for the construction and operation of instant project.

5.12.1 Manpower (Direct & Indirect)

During construction phase 10-15 workers will be involved. During the operation phase of the project, the total manpower requirement is estimated to be 8-10 comprising of; supervisor, machine operators, non-technical persons/workers and electrician. All recruited staff will be given appropriate training in order to educate them on the specific job tasks to be performed; safety procedures and monitoring parameters.

5.12.2 Amenities

Following amenities will be used during operation of said project

i. Electricity/ Power Supply

The main power source would be WAPDA while generator (150 KVA) would also be used for primary and secondary source of power for operational activities of LPG storage and filling plant. Both of these power sources will accommodate energy needs for electric equipment at the plant.

ii. Wastewater Management

Instant project is the construction of LPG storage and filling plant which will generate wastewater from domestic usage during construction and operation phases. The wastewater produced from operations would be **0.36-0.52 m^3/day**. The wastewater originating from

processes will be non-toxic which will be treated in septic tank and used for horticulture purposes or discharged into drain.

iii. Water Consumption

The groundwater will be consumed at LPG storage and filling plant for domestic (at the rate of **0.5-0.7 m^3/day**) as well as for emergency case. For domestic usage conservation practices will be adopted to reduce water consumption. While, water tank of **12'×8'** will be build up to serve as emergency water supply in case of fire incidents.

iv. Solid waste

The construction of said project will create construction waste and domestic waste (**total estimated 8-13 tons**) which will be handed over to contractor. Whereas, only domestic solid waste generated (**0.5-1.0 kg/day**) during operational phase will be disposed off as per area of practice.

5.12.3 Health and Safety

The workers designated to relevant tasks will be trained on responding to situations like injuries. The workers would be provided with appropriate gadgets to control such incidents. The warning signs would be employed at the plant to control health and safety related issues. In addition to this, firefighting equipment including hydrants, pipelines, sprinklers, detectors and water tank would be installed at project site to tackle fire incidents.

5.13 Restoration and Rehabilitation Plan

After construction of LPG storage and filling plant, the site will be restored by removing unwanted materials. The materials capable of recycling/reuse will be either sold in the market or to be reused for other suitable purposes.

Safety measures as desired under the code of demolition will be adopted to avoid any harm to humans, property around, or the environment in the project area. Generated dust will be minimized by sprinkling water on regular basis. The plantation would be done after the construction to restore the area and control air emissions/odor from the project site.

CHAPTER 6: DESCRIPTION OF ENVIRONMENT

This section describes the baseline conditions, which shows the clear-cut picture of existing environmental resources; physical, ecological and socio-economic environment of the Project Area. Information on these aspects has been derived from field visits to the project area as well as information obtained through visits to the Government departments and other relevant agencies. The primary data was collected by surveying the project area and its nearby vicinity. The secondary data regarding physical parameters (topography, geology, seismology, hydrology and climatology) was obtained by visiting relevant departments and their official websites. The biological parameters (flora and fauna) were also studied in the project area. The vegetation of project area was studied by preparing a floristic list based on visual observation. The species were recorded with reference to their historical 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 departments. The socio-economic aspects were studied and analyzed by conducting detailed socio-economic surveys.

6.1. Baseline Physical Environment

In this section, physical resources such as; topography, soil, climate, surface as well as ground water resources and its quality, ambient air quality and geology of not only the project site but also the city as a whole to assess whether the project under assessment can or does have any impacts on any of these parameters. The description of physical environment of the project site is present in the following sub sections

6.1.1. Topography & Geology

The said project of LPG storage and filling plant is located in the west of Hafizabad city which lies within the central alluvial plains of the Indus Basin. The district features a flat topography with gentle slopes, characteristic of the fertile Punjab plains. The elevation ranges between 180 to 200 meters above sea level, with minimal variation across the landscape. This uniform terrain is ideal for agriculture, particularly rice and wheat cultivation, supported by an extensive irrigation network derived from the Lower Chenab Canal system.

Geologically, Hafizabad is part of the Indo-Gangetic alluvial plain, composed predominantly of unconsolidated sediments deposited by the Chenab River and its tributaries. These deposits include silts, clays, and fine to medium sands, extending hundreds of meters deep. The area lacks significant rock outcrops due to its sedimentary nature and the absence of tectonic uplift. The soil is fertile and well-drained, supporting intensive farming. Overall, the topography and geology of Hafizabad make it a productive agricultural zone, shaped largely by fluvial processes and centuries of river deposition.

6.1.2. Seismicity

According to Seismic Zoning of Pakistan, the project area falls under Seismic Zone 2B which is classified as having moderate seismicity, meaning the area experiences infrequent, low to moderate earthquakes. The seismic zoning of Pakistan is given below in Figure:

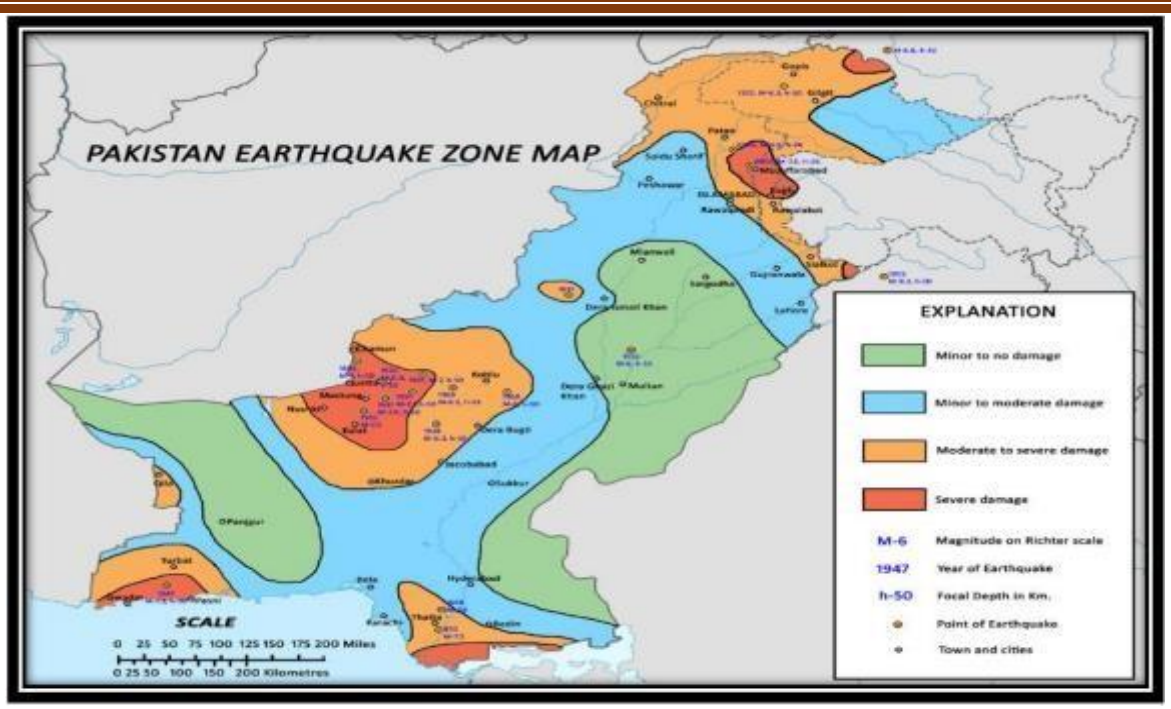
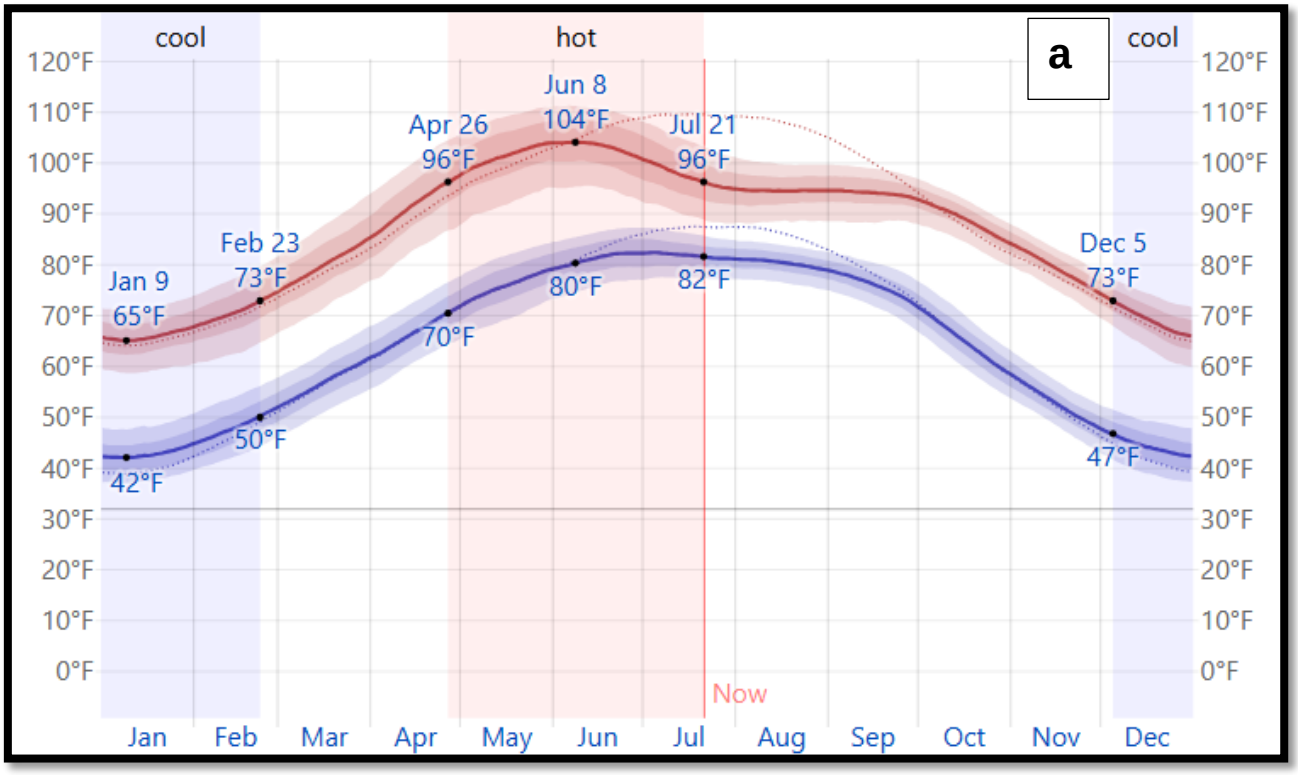


Figure 6. Seismic zoning of Pakistan

6.1.3. Climate

The said project is located in Hafizabad district which features as hot during summer and cold during winter. The Eastern has proximity of rain fall than western part. The monsoon season is from July to September. Fertile soil allow the cultivation of high quality rice. The average per month rainfall is between 50 and 75 mm[1].



[1] https://hafizabad.punjab.gov.pk/climate_grw

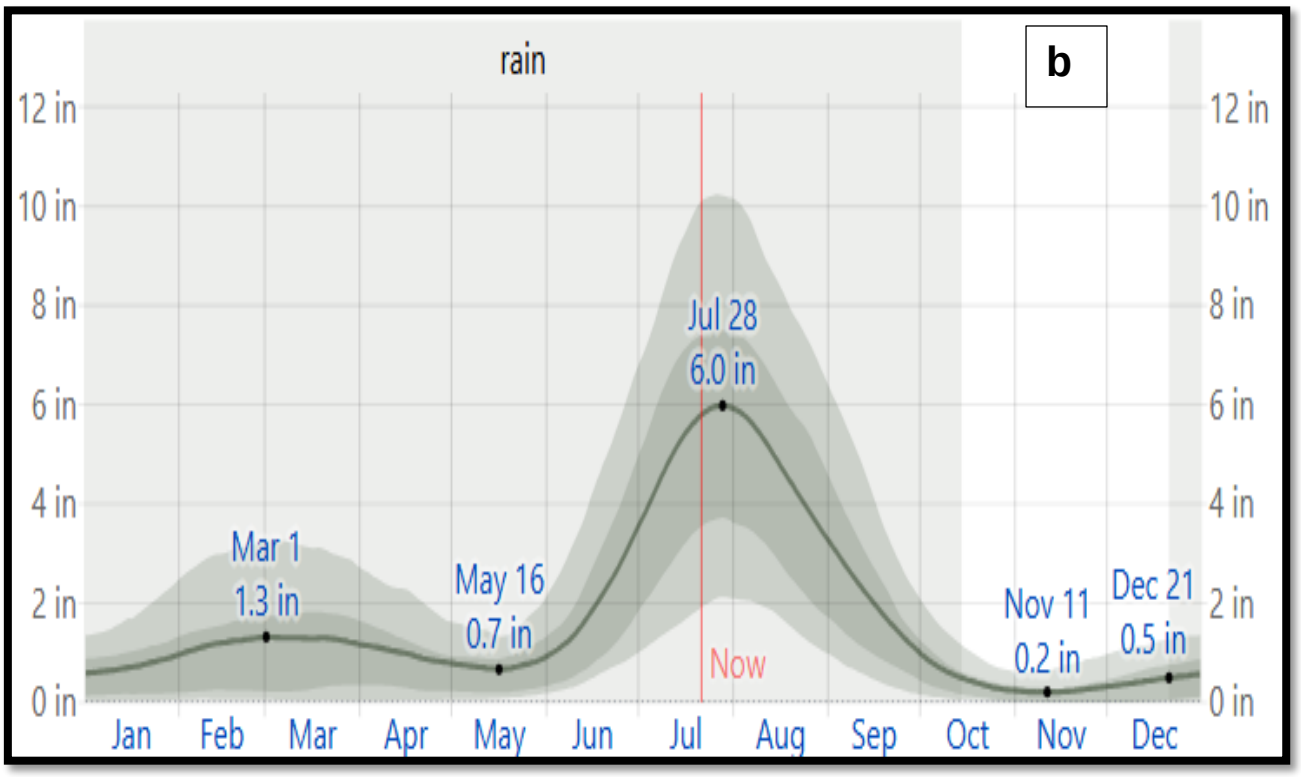


Figure 7. Average temperature (a) and rainfall (b) in the project area

6.1.4. Ambient Air Quality

The primary air pollutants are; carbon monoxide (CO), oxides of nitrogen (NOx), sulfur dioxide (SO_2), and particulate matter (PM). In order to determine the air quality of the area, environmental monitoring was carried out by SEAL being EPA certified Laboratory and having the requisite sampling device and expertise for collection of samples. To determine the air quality of the area ambient air monitoring was carried out and following results were obtained:

Table 7. Ambient Air Quality Monitoring Results

S#	Monitoring Source	CO	NO_x	SO_2	O_3	$PM_{2.5}$	PM_{10}
PEQs		mg/m³	µg/m³	µg/m³	µg/m³	µg/m³	µg/m³
		5	120	120	130	35	150
1	Near main gate	2.26	42.4	45.8	16.23	29.5	132.6

6.1.5. Ambient Noise

Noise level measurements had been carried out within the selected site. This analysis showed that values are much below the limit prescribed under the Punjab Environmental Quality Standards (PEQS). Monitoring reports are attached as **Annex D.**

Table 8. Ambient Noise Monitoring Results

S. No.	Monitoring source	Unit	PEQs	D.Time
1	Centre of site	dB (A) Leq	75 (Day time)	72.8

6.1.6. Groundwater Quality

Groundwater quality results of project area are given below:

Table 9.Ground water Analysis Results

Sr. No.	Parameter	Method	Unit	Result	PEQS
1	pH	APHA 4500 HB	--	7.02	6.5-8.5
2	Total Dissolved Solids (TDS)	APHA 2540 C	mg/l	208	1000
3	Chloride	APHA 4500- Cl^- B	mg/l	33.99	250
4	Fluoride	APHA 4500-F^- D	mg/l	0.0	1.5
5	Taste	APHA 2120 C	Object. /unobj.	Non-objectionable	Unobject.
6	Odour	APHA 2120 B	Object. /unobj.	Non-objectionable	Unobject.
7	Colour	APHA 2120 C	TCU	0.08	15
8	Nitrate (as NO_3^-)	APHA 4500-NO^{3-} D	mg/l	0.3	50
9	Nitrite (as NO_2^-)	APHA 4500-NO^{2-} B	mg/l	0.003	3
10	Lead	APHA -3114 B	mg/l	0.0	0.05
11	Total Hardness as $CaCO_3$	APHA 2340 C	mg/l	86.24	500
12	Turbidity	APHA 2130 B	NTU	0.1	5
13	Zinc	APHA 3500-Zn B	mg/l	BDL	5
14	Aluminum	APHA 3111 B	mg/l	BDL	0.2
15	Chromium	APHA 3500 B	mg/l	BDL	0.050
16	Cadmium	APHA 3500 B	mg/l	BDL	0.01
17	Copper	APHA 3500 B	mg/l	0.0	2
18	Boron	APHA 4500-B	mg/l	0.007	0.300
19	Barium	APHA 3111 B	mg/l	0.009	0.700
20	Antimony	APHA 3114 B	mg/l	BDL	0.020
21	Arsenic	APHA 3114 B	mg/l	0.0	0.050
22	Cyanide	APHA 4500-CN^- F	mg/l	0.004	0.05
23	Mercury	APHA 3112	mg/l	BDL	0.001
24	Nickel	APHA 3111 B	mg/l	BDL	0.020
25	Residual Chlorine	APHA 4500-Cl B	mg/l	0.195	0.2 – 0.5
26	Total thermos coliform	APHA 9222 B	Number/100ml	0	0/100ml
27	Total coliform	APHA 9222 B	Number/100ml	0	0/100ml

28	E.coli	APHA 9222 C	Number/100ml	0	0/100ml

6.2 Baseline Biological Environment

There is no significant forest area is located around the project site or in nearby areas. The biological environment of Hafizabad is primarily shaped by its agricultural landscape and riverine ecology. The region supports a variety of flora including crops like wheat, rice, sugarcane, and fodder, along with native trees such as kikar, sheesham, and eucalyptus. Fauna includes common species like jackals, wild boars, hares, and various reptiles. The area also hosts numerous bird species, including partridges, doves, and seasonal migratory birds. Aquatic life is supported by the Lower Chenab Canal and associated water bodies, home to fish and amphibians. Overall, Hafizabad's biological diversity is closely linked to its irrigation network and cultivated environment. In sub-sections below biological features are discussed below:

6.2.1 Flora

During the construction of LPG storage and filling plant, no important biological feature will be damaged or disturbed. Flora of the Hafizabad district has been greatly modified by humans, amongst trees the most important are Kikar, Shisham and Eucalyptus.

6.2.2 Fauna

During site visit near site no such fauna was noticed that could be impacted due to construction of aforementioned project. However, near project site dogs, cats, cows, sparrows, doves, partridges and jackal were seen.

6.2.3 Archaeological Sites or Wetlands

It is envisaged that no building of archaeological, cultural and historical importance will be damaged at the time of construction of LPG storage and filling plant Moreover, there is no wetland or surface water body reported to be affected due to the construction of the aforesaid project.

6.2.4 Endangered Species

There is no floral or faunal species inhabiting the project area that are included in the Red Data Book of IUCN. The populations of birds are reported to be reduced over time due to excessive pesticide sprays in agricultural crops and loss of habitat.

6.3 Baseline Socio-Economic Environment

Socio-economic environment is represented by the human and economic development and quality of life values. For the study of socio-economic environment of the project area, field surveys were conducted and interviews were held with the various stakeholders. The socioeconomic conditions of the project area are as follow:

6.3.1 Industry/businesses

The industrial units and small businesses present nearby project site are shown in the figure.

- Haq Bahoo Filling station located at a distance of **0.29 Km**
- Hassan agro and Co located at a distance of **0.47 Km**

- Mahallah Rice mills located at a distance of **0.31 Km**

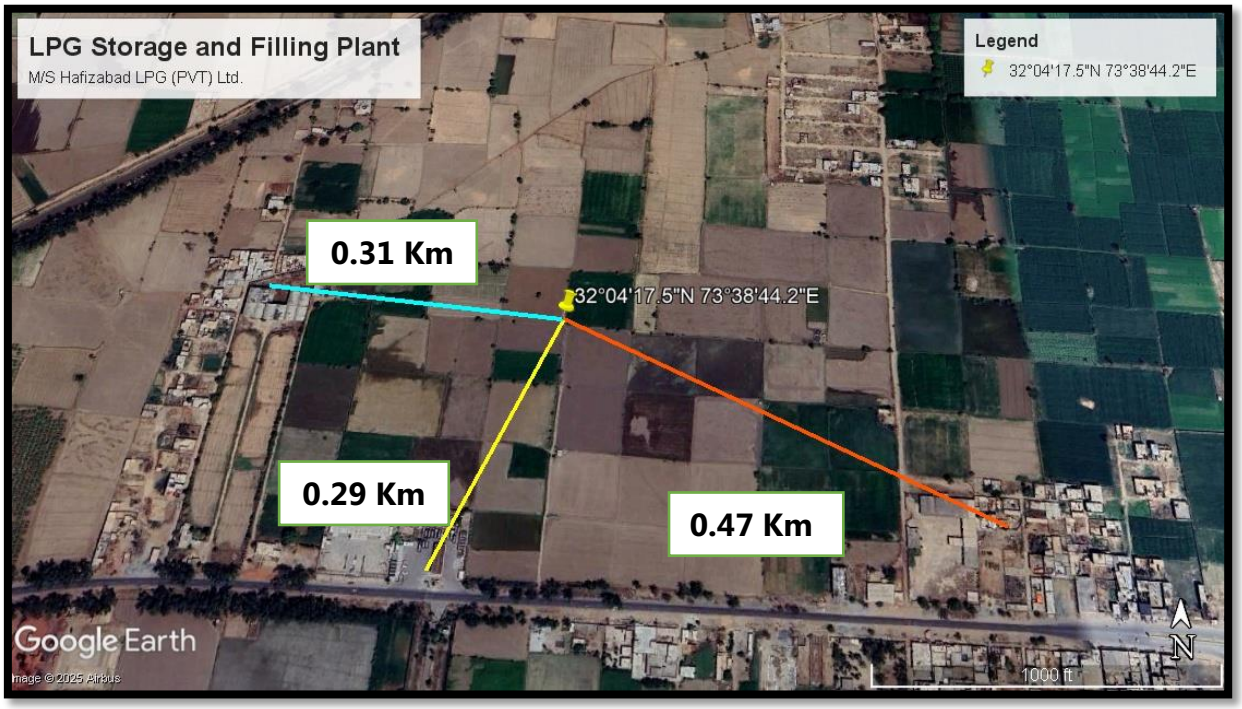


Figure 8. Nearby businesses of the project area

6.3.2 Health Facilities

Healthcare services are provided to the citizens by both public and private sector hospitals. The nearest hospital is shown in below image and mentioned below.

- PESSI social security emergency centre jalal bhattian road, Hafizabad at a distance of **1.49 Km**

Figure 9. Hospital near project area

6.3.3 Educational Facilities

Education up to primary is present in project area. The schools located nearby are:

- Govt. girls primary school solangi awan located at a distance of **0.58 Km**
- Govt. boys primary school solangi awan at a distance of **0.60 Km**
- Govt. boys primary school kot ibrahim at a distance of **1.40 km.**

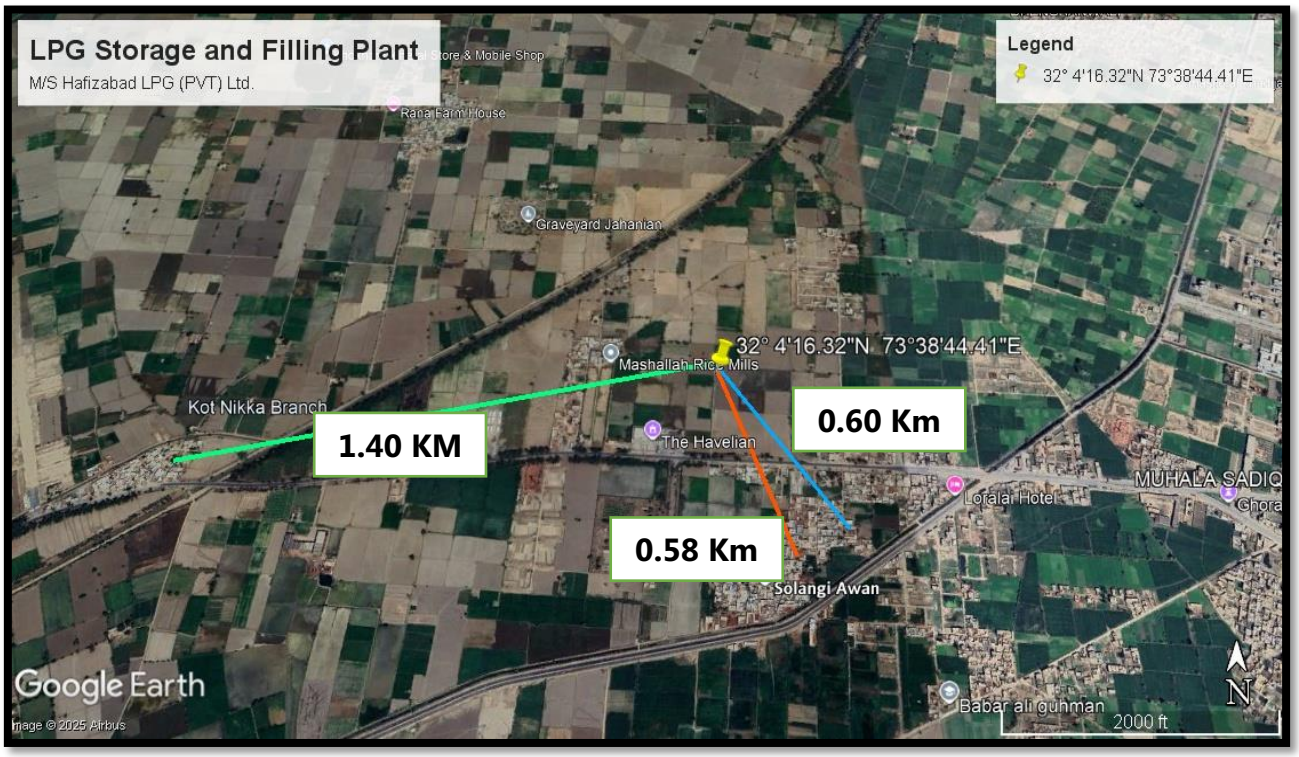


Figure 10.Educational institutes present near project area

6.4 Lab Reports of Environmental Analysis

Testing of different parameters was carried out from EPA certified laboratory i.e. SEAL to check the quality of different environmental parameters. The copy of the lab reports of these parameters (ambient air analysis, ground water quality analysis and noise) are attached herewith as **Annex-D**

6.5 Suitability of the Site

The project site is open space located in industrial cum agricultural area and away from the residential communities. The site does no fall in environmental sensitive area and all commodities are at a suitable distance from project site as they will not be impacted by the construction of LPG storage and filling plant and its operational activities even locals will get benefits and job opportunities. No replacement, relocation and rehabilitation are required for the development of proposed project.

CHAPTER 7: IMPACT ASSESSMENT & SCREENING PROCESS

This section discusses the potential environmental impact of instant project, methodologies for impact identifications and characteristics of impacts including nature, magnitude, extent, location, timing, duration, reversibility and risk. The assessment carried out in this Section is based on potential impacts on overall environmental receptors within the project area.

7.1 Methodologies for Impact Identification

During construction, adverse environmental & social impacts depend on the resources and receptors involved along with other parameters such as; geographical scope (magnitude and extent), temporal scope (duration) and reversibility. But for construction of instant project it has been anticipated that this project will have beneficial social impacts, it will bridge the gap between supply & demand, employment opportunity will be increased for which locals will be preferred and socio-economic uplift of the proponent. Having identified and characterized the potential significant impacts during design, construction/ installation and operation phase of project an Environmental Impact Severity Matrix & checklist to summarize all the identified impacts as mentioned below in tables.

Table 10.Impact Significance Criteria

Impact	Criteria
No Impact	When the said activity will have no impact
Long Term	When the impact is of high intensity with high spread and high duration or of high intensity with medium spread and medium duration
Moderate Term	When the impact is of moderate intensity with high spread and high duration or of high intensity with low/ moderate spread and low duration
Short Term	When the impact is of low intensity but with moderate spread and moderate duration or of moderate intensity
Insignificant	When the impact is of low intensity, low spread and low duration
Adverse	When the impact is of large intensity, spread easily and long-term
Beneficial	When the impacts are positive and improve the environmental conditions

Table 11. Impact Matrix Checklist for Construction Phase

Environmental Sensitivities	Intensity of Impact						Impact Nature				Impact Significance		
	Low Intensity	Moderate Intensity	High Intensity	Local	Moderate	Regional	Beneficial	Adverse	Insignificant	No Impact	Short Term	Moderate	Long Term
Physical Parameters													
Air Quality		✓		✓									
Noise		✓		✓									
Water Quality		✓		✓									
Biological Parameters													
Land Environment	✓												
Flora	✓												
Fauna	✓												
Physical Parameters													
Local Economy	✓				✓								
Social Impacts	✓				✓								
Health & Safety	✓			✓									

Table 12. Impact Matrix Checklist for Operational Phase

Environmental Sensitivities	Intensity of Impact						Impact Nature				Impact Significance		
	Low Intensity	Moderate Intensity	High Intensity	Local	Moderate	Regional	Beneficial	Adverse	Insignificant	No Impact	Short Term	Moderate	Long Term
Physical Parameters													
Noise		✓		✓									
Water Quality	✓			✓									
Air Emissions	✓			✓									
Biological Parameters													
Land	✓			✓									
Flora	✓			✓									
Fauna	✓			✓									
Physical Parameters													
Local Economy		✓			✓								
Social Impacts		✓			✓								
Health & Safety		✓		✓									

7.2 Characteristics of Impacts

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

Table 13. Impacts Characteristics

Sr.#	Environmental Component	Impact Characteristics												
		Duration		Location		Frequency		Extent		Significance			Reversibilit	
		Long	Short	Direct	Indirect	Cont.	Intermittent	Wide	Local	Large	Moderate	Minor	Rev.	Irrev.
Beneficial Impacts														
1	Employment Opportunity	◙		◙		◙			◙		◙		◙	
2	Solid Waste Management	◙		◙		◙			◙		◙		◙	
3	Land Value	◙			◙	◙			◙			◙		◙
4	Tree Plantation	◙		◙		◙			◙		◙			◙
Adverse Impacts														
1	Solid Waste	●		●			●		●			●	●	
2	Health and Safety	●		●		●			●		●		●	
3	Physical Hazards		●	●			●		●		●			●
4	Security Risks		●	●			●		●		●		●	
5	Wastewater		●	●		●			●			●	●	
6	Air Emissions	●		●		●			●			●	●	

CHAPTER 8: SCREENING POTENTIAL ENVIRONMENTAL IMPACTS AND MITIGATION MEASURES

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

8.1 Project Location

The instant project is construction of LPG storage and filling plant under the name of M/S Hafizabad LPG (Pvt) Ltd. There is no human settlement, heritage building, social structure, grassland or preserved area in the project vicinity that could be damaged, dislocated or dismantled due to the project activity in said area.

Nature of Impact

The nature of the impact will be direct, low, short-term and hence in-significant.

Mitigation Measures

No mitigation measure will be adopted as the selected site is owned by the proponent

8.2 Design

The said project is construction of LPG storage and filling plant under the name of M/S Hafizabad LPG (Pvt) Ltd with storage capacity of 100 tons and filling capacity of 20 tons/day. However, in designing phase a management system should be devised & implemented to control the anticipated environmental impacts. The design of the instant project will adhere to all standard technical requirements in order to avoid adverse impacts on socio-environmental aspect.

Nature of Impact

The nature of impact will be direct, low, short-term and hence in-significant.

Mitigation Measures

Following mitigation measures will be adopted while designing the foresaid project:

- All the generated waste will be handled properly.
- The process employed for instant project is simple & environmentally friendly.
- The project is design to minimize pollution load.
- On-site training safety training will be given to the workers.
- Fire-fighting equipment will be installed at sensitive places near the project site.

Impacts and Mitigation Measures during Construction

During the construction of LPG storage and filling plant, civil structure work and installation of equipment will be done. It would bring in immediate but short-term changes on various components of environment near the project site. This section explains how aforesaid project will affect different environmental aspects and its mitigation measures to manage the impact. The anticipated impacts will be temporary and localized in nature. Even though, the measures are proposed to minimize such impacts.

8.2.1Soil Contamination

During construction, the chances of soil erosion and contamination are less, as no major constructional activities will be involved in said project. There are low chances of land contamination due to release/spill of lubricants, oil and other materials as no major construction is involved. The impact will be short term, localized and can be controlled through immediate appropriate management and mitigation measures. This impact is considered negative of minor magnitude. Hence, the impact is in-significant.

Nature of Impact

The nature of said impact will be direct, low and hence in-significant.

Mitigations

Following mitigation measures will be adopted to protect the soil from erosion and contamination:

- Spill prevention and response plan for storage, usage and transfer of fuel should be prepared (if used on site) and implemented.
- Workers should be trained on spill prevention and response plan (if needed).
- Maintenance of vehicles as well as equipment will be carried out at designated areas within the facility.
- 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.
- Machinery involved should be maintained properly to avoid leakages.
- The proponent will be required to instruct and train their workforce in storage and handling of materials that can potentially cause soil contamination.
- Solid waste generated during construction of the plant will be properly and safely disposed of as per area of practice.

8.2.2Air Emissions

The main source of air emission during said phase is dust. It will be generated due to movement of equipment at the site during constructional activities. Dust emissions are expected to result in increased particulate matter thus affecting baseline air quality, primarily in working area for a short duration.

Nature of Impact

The nature of proposed impact will be direct, low, short-term and hence in-significant.

Mitigations

Following mitigation measures will be adopted:

- In order to reduce concentration of suspended dust particles & transport roads will be sprinkled with water on the regular basis.
- Construction/ Installation activities causing dust should not be carried out on excessively windy days.
- Workers will be provided with masks for protection against the inhalation of dust and they should be trained for its use.
- Strict speed limit for the vehicle carrying the raw-material should be imposed.
- Emission of exhaust gases from vehicles used for construction should be controlled.

8.2.3 Impact on Water Environment

The construction will consume water for structure building and for domestic purposes. The overall impact on water environment due to aforesaid project activities are considered short-term and in-significant.

Nature of Impact

The nature of said impact will be direct, low, short-term and hence in-significant.

Mitigations

Following mitigation measures will be adopted:

- Water conservation techniques should be adopted to conserve water.
- Labor should be trained to conserve the water.

8.2.4 Impact on Flora & Fauna

No impact on the flora and fauna is being envisaged as said project is open plot owned by the proponent. No additional disturbance is being envisaged for implementation of said project.

Nature of Impact

The nature of said impact will be in-significant.

Mitigations

Following mitigation measures will be adopted:

- After the completion of installation phase trees will be planted in the designated green areas.
- For the management of landscape, local and native trees will be planted.
- Trees will be planted along the project area boundary.
- Unnecessary up-rooting of the trees and plants must be avoided.

8.2.5 Impact on Noise Environment

The noise produced during establishing of the plant may not have significant impact on the existing ambient noise levels as all sensitive receptors are located at adequate distance. The major installation work will be carried out during the day hours only. The construction/ Installation equipment may generate high noise which can affect the personnel operating the machines. Use of proper personnel protective equipment will mitigate any adverse impact of noise on the working population.

Nature of Impact

The nature of proposed impact will be in-significant.

Mitigations

Following mitigation measures will be adopted:

- Selection of up to date and well-maintained equipment with reduced noise levels ensured by suitable in-built damping techniques or with appropriate muffling devices.
- Limiting noisy activities to the day hours, wherever possible.
- Providing the construction workers with suitable hearing protection like; ear cap, or earmuffs and training them how to use effectively.

- Use of low noise machinery, or machinery with noise shielding and absorption are the mitigation measures suggested for said project.

8.2.6 Socio-Economic Impacts

In project area, no significant changes are envisaged in traditional life style and occupation of local people residing in the nearby communities as it is being established at adequate distance from various sensitive receptors. The local people are rather benefited due to the provision of job opportunities. No impact is envisaged due to influx of workers as local will be preferred and hired for working. Social issues may arise which will cause minor negative impact on the social life style of people. Moreover, health and safety related issues may arise during the construction / Installation activities. These impacts are in-significant can be further reduced significantly by adopting best management practices.

Nature of Impact

The nature of said impact will be in-significant.

Mitigation Measures

Following mitigation measures will be adopted to reduce the socio-economic impact on the community:

- Good relations with local communities will be promoted by encouraging Contractor to provide opportunities for skilled and un-skilled employment to the locals as well as on-job training.
- The contractor should prefer hiring local labor from adjacent community;
- The contractor will keep the copy of National Identity Card (CNIC) of his employees and will warn the workers not to involve in any anti-social activities otherwise they may face dire consequences.
- At the time of hiring the Contractor has to ensure that workers should be of good repute.
- First aid kits having all the necessary first aid stuff will be available at site.
- Routine medical check-ups of all the field staff including unskilled labor needs to be conducted by qualified physician and surgeon.
- Training of workers should be carried out for operating various constructional/ Installation machinery, safety procedures should be adopted, environmental awareness should be carried out, equip all workers with safety boots, helmets, gloves, protective masks and monitoring of their proper and sustained usage will be carried out. In case of accidents, contractor will provide free medical treatment to the community.
- The Contractor will be responsible for sensitivity towards the local customs and traditions.

Impacts and Mitigation Measures during Operational Phase

The following section describes the potential impacts which are associated with the operation of above stated project.

8.2.7 Noise

Noise pollution is not expected to occur beyond PEQS during the operational phase. Moreover, this will have no significant impact since the nearby residential areas are found at

the safe distance as shown in the Google Earth Maps attached in **Section 1.5** and **Section 5.5**.

Nature of impact

The nature of said impact will be in-significant.

Mitigations

In general, the following methods will be adopted to control the noise pollution from the unit:

- Personal protective equipment like; ear plugs and ear muffs should be provided to employees working in the noise prone areas.
- Time to time tuning and maintenance of machineries should be done.
- Ambient noise levels as mentioned in PEQS will be complied.
- Monitoring of the ambient noise level will be carried out on regular basis.
- A greenbelt will be developed all around the plant which will be act as noise barrier.
- Residential area is at safe distance from selected site.
- Proper encasement of noise generating sources like generator will be done to control the noise levels within limits.
- The use of complete or partial enclosures as and if required.
- Generator would be kept in separate room

8.2.8 Ambient Air Quality

During operational phase of instant project, air emissions will emit from only generator while, no emissions would be released from LPG storage and filling process.

Nature of impact

The nature of said impact will be in-significant.

Mitigations

Following mitigation measure will be adopted to keep the ambient air quality of the area intact.

- The particulate emissions will be controlled for generator by installing appropriate device with its chimney and its regular monitoring
- Company owned vehicles will be maintained on regular basis in order to avoid air emissions.
- Monitoring of the ambient air quality will be carried out on regular basis.

8.2.9 Water Resource

Instant project will involve water usage for domestic purposes. The groundwater extracted from bore will accommodate water supply of mill.

Nature of Impact

The nature of the impact will be direct and moderate term.

Mitigation

Following mitigation measures will be adopted to reduce the impacts on water resource

- The generated wastewater will be treated through septic tank and used for horticulture while the excess will be discharged in nearby drain.
- For recharging of the groundwater open green spaces will be left within the premises.
- Close the water tap when not in use to conserve the water resource.
- Provision of safe drinking water to the workers will be ensured.

8.2.10 Solid Waste Management

The domestic solid waste will be generated during project constructional and operational activities. The solid waste generated form domestic purposes will be disposed off as per area of practice while construction waste will be handed over to contractor.

Nature of Impact

The nature of impact will be direct and long-term.

Mitigation

Following mitigations should be adopted to reduce the issues related to the solid waste:

- Domestic solid waste should be stored in the covered bins in order to avoid the growth of vectors and rodents as well as to control the odor and to reduce public nuisance. It should be collected and disposed of as per area practice.
- Appropriate in-housekeeping, sanitary and solid waste management practices should be adopted.
- Regular visual monitoring will be carried out to ensure good house-keeping practices.
- The non-reusable solid waste generated during construction will be handed over to contractor.

8.2.11 Emergency Response

The proponent and supervisor will chair incident control. In the case of minor emergency, the first aid box will be provided. For incidents and accidents that 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; accident and natural disasters.

Nature of Impact

The nature of the said impact will be direct, low, long-term and hence significant.

Mitigation

- Workers should be given adequate training of handling machinery.
- Emergency call service must be made available 24/7.
- Safety and hazards signs will be displayed within the facility to avoid any unfortunate incident.

8.2.12 Occupational Health and Safety Impacts/Hazard Risks

Major occupational hazards associated with LPG storage and filling plant operations include fire hazard, chemical and gas exposure and ergonomic hazard.

Nature of Impact

The nature of the said impact will be direct, long-term and significant.

Mitigation

- PPEs will be provided to workers involved in critical jobs.
- It is recommended that necessary Trainings should be given to the staff regarding job safety aspects and job specific hazards.
- Monitoring and supervision of project activities will also involve assessment of implementation of measures for occupational safety
- The detectors would be used to identify leakages from valves and pipes.

Potential Environmental Enhancement Measures

Following potential environmental enhancement measures will be adopted:

i. Enhancement in Employment Opportunities

During construction of LPG storage and filling plant, the employment opportunity will be enhanced. Workers will be hired from local community, include; skilled and un-skilled workers. During construction phase, 10-15 workers will be hired and in operational phase approximately 8-10 workers will be employed. It will include technical and non-technical staff. Locals will also have the opportunity to diversify their income by being employed during various project phases. 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.

ii. Tree Plantation

At the end of construction, landscape of the area will be enhanced by planting native and ornamental plants along the boundary of project site. This will enhance the aesthetic beauty of the area.

CHAPTER 9: ENVIRONMENTAL MANAGEMENT AND MONITORING PLAN

9.1. General

This chapter summarizes the various mitigation measures as outlined previously in this EIA Report that will be implemented during the designing, construction/ Installation 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 of the aforesaid project is presented in the sub-sections below. As per the environmental legislation in Pakistan, the compliance status of the conditions mentioned in the construction/Installation should be submitted along with other documents 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 requires regular environmental monitoring.

9.2. Objectives.

An Environmental Monitoring Plan (EMP) 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/installation 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 associated with the commencement of the instant project.
- To state and implement standards and guidelines which are required under environmental legislations particular in context to the proposed project commencement.
- To facilitate the implementation of the mitigation measures by providing the technical details of each Project's impact and proposing implementation schedule of the proposed mitigation measures.
- Define a monitoring mechanism and identify monitoring parameters to ensure that all proposed mitigation measures are completely and effectively implemented.
- Identify the resources required to implement the EMMP and outline corresponding financing arrangements.

9.3. Proposed Mitigation Actions and Monitoring Program

It lists all the mitigation measures identified in the EIA and the associated environmental or social aspect in line during construction and operational phase with the administrative framework involving all the responsible implementing authorities who are required to take the planned actions/measures and monitor it accordingly. It enhances project benefits by reducing its impacts and making it environmentally friendly. The environmental management and monitoring plan is given below in Table 14.

Table 14: Environmental Management and Monitoring Plan

Project Activities	Potential Impacts on Environment/ Type of Impact		Mitigation Measures	Monitoring
Permitting and Compliance	As per Law/ Guidelines	• Ensure to obtain necessary permits and comply with all rules and regulations. • Obtained permits should be submitted to concerned departments for compliance.	• Environmental Impact Assessment along with Environmental Management and Monitoring Plan is being submitted to EPA Punjab. • Permit from OGRA and explosives department will be obtained for compliance	Project proponent
Site Selection	Land Acquirement and Land Use	• Selected site should be away from sensitive areas. • Include Buffer Zones and design storage on impervious surface to manage runoff.	• Selected site is owned by proponent and is present in an agricultural area so there will be no such impact on land. • The leftover waste will be removed as soon as possible after the unit is constructed. • Visual monitoring will be carried out to keep in check the in-house keeping practices and other hazards in check.	Project Proponent
Transportation	Road safety	• Use vehicles capable of safely carrying the weight of scrap materials and finished products • Choose routes that avoid residential areas especially for longer distance. • The speed limit must be controlled	• Drivers will be trained on safe transportation. • Load will be covered with tarpaulin sheets to prevent dust. • It will be ensured that vehicles will be in good condition to avoid	Project Proponent

			any incident during transportation.	
Air Quality	CO_2, SO_x, NOx, PM	• Use pollution control equipment • Monitor and limit the pollutants i.e., Sox, NOx, and other particulates.	• Regular maintenance of generator and vehicles will be done during project operational activities.	Supervisor
Noise Pollution	Noise from machinery and operations	• Install noise barriers. • Schedule operations during day-time	• Regular maintenance and lubrication to equipment will be ensured. • Monitoring/ regular noise assessments will be done to ensure levels are within prescribed limits.	Supervisor
Water Pollution	Risk of contamination	• Implement containment structures to capture runoff, especially in areas handling storage and processing. • Use permeable paving, retention ponds and drainage system to manage storm water.	• Domestic wastewater will be treated in septic tank and used for horticulture purposes while excess will be released in drain. • Periodic water testing will be done and monitoring reports will be submitted to EPA Punjab.	Supervisor
Groundwater consumption	Risk of contamination and depletion of reserve	• Use drainage system to manage storm water.	• Pressure washers and low flow faucets will be used on site • The workers would be trained to do use water efficiently and conservatively • The rainwater harvesting plan will be installed to conserve water sources	Supervisor

Solid Waste management	Generation of domestic waste	• Schedule removal of Solid waste to avoid contamination of land and degradation of waste • Maintain records of waste generation, storage and disposal for regulatory compliance and tracking.	• Proper solid waste management plan will be formulated which will be followed through-out the project operational activities. • Records of waste generation will be maintained. • Domestic solid waste will be disposed of as per area practice.	Supervisor
Health and safety	Health risks from emissions, noise, transportation	• Record and address complaints • Provide gloves, googles, respirators, ear protection and other PPEs. • Install fire extinguishers, sprinklers and emergency exits. • Conduct regular health and safety training • Post safety signs in areas • Encourage reporting of all incidents, near-miss and unsafe conditions.	• Health and safety policy will be formulated which will be followed during the project operational activities. • Emergency kits and exits will be provided in the unit • PPEs will be provided to the workers. • Training will be done and record will be maintained.	Supervisor
Use of local manpower	Employment Generation	• Local people will be hired for less technical work or non-skilled work. • Locals will be preferred and will be involved at various stages of project development. This will improve the socio-economic status of the people directly linked with the project.		Project Proponent
Civil works	Dust, Noise & Vibration, Employment, Health & Safety of Workers	• Water sprinkling will be done to reduce dust emissions. • Noise control measures will be implemented. • Safety of the workers should be protected where the physical activity is involved. • PPEs will be provided to the workers and their usage will be ensured.		Project proponent

Biodiversity	Impact on nearby vegetation	• Maintain green buffer ‘ • Landscaping should be done zone	• Plantation will be done around the project area • Biodiversity measures will be taken to prevent the Environment.	Project proponent

9.4 Schedule for Implementation and Environmental Budget

The construction of plant will be done within 3-6 months after getting Environmental Approval/NOC. The total cost of the project is **PKR 180 million approx.** Environmental budget of **PKR 0.5 million** will be allocated to protect the environment which will include; tree plantation, environmental monitoring as per SMART Rules, etc.

9.5 Environmental Management Team

The primary responsibility for implementing different aspects of the EMP within the company lies with the proponent of M/S Hafizabad LPG (PVT) Ltd.

9.6 Proposed Monitoring program

Environmental monitoring is a vital component of the Environmental Management Plan. It is the mechanism through which the effectiveness of the EMP in protecting the environment is measured. The feedback provided by the environmental monitoring is instrumental in identifying any problem or lapse in the system under implementation and planning corrective actions. For domestic activities already constructed facilities will be used. Solid waste disposal will be according to standard practices of area. It should be noted that it is difficult to outline a formal monitoring protocol for specific environmental parameters and key impacts until detailed project design has been completed. A formal monitoring protocol will be included within the revised EMP once the detailed project design has been completed.

Table 15. Proposed Monitoring Program

Components	Parameter to be Monitored	Measurement	Frequency	Location	Responsibility
Land Resource	Soil quality	Regular visual monitoring and soil analysis	Daily	On-site	Proponent
Noise Levels	Noise level on the site and adjacent area on dB(A) scale	Noise level reading will be measure on regular basis	Regularly	At all noisy locations within the facility	Supervisor
Workers safety	Injuries and accidents	Recording injuries	Daily	On-site	Supervisor
Wastewater	As per SMART Rules	Testing by EPA Certified Lab	Monthly	On-site	Supervisor

Ecological Resource	Flora & Fauna of the area	Observation by conducting surveys	During Baseline Survey, once in a year and after the completion of the Project	Around project site	Proponent

9.7 Proposed EMP reporting and reviewing procedures

Following protocols will be adopted for reporting & reviewing EMP:

- During construction of LPG storage and filling plant, EMMP reporting and reviewing will be done by the contractor/proponent. Regular monitoring will be done and reports will be submitted in EPA, Punjab as per condition of Environmental Approval of construction/Installation phase.
- Monitoring reports will be reviewed by supervisor and proponent of M/S Hafizabad LPG (PVT) Ltd. and then will be shared with EPA, Punjab.
- Photographic records will also be maintained on regular basis.
- Recorded data will be reviewed by supervisory contractor/proponent so that it can be further improved if required.

9.8 Environmental Training

M/S Hafizabad LPG (PVT) Ltd. will ensure in-house training for the project staff, labor and the supervisory staff through the provision of one day basic training and one day advanced training, covering environmental and social aspects of the projects in general and implementation requirements will emphasis on the development project in general, on the roles & responsibilities of the staff and the labor 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/minimizing air pollution, particularly from the transportation of LPG and generator will be given to the contractor/proponent.
- Safety measures against hazards for workforce and the local communities arising from the construction and operational activities.
- Emergency response trainings.
- Fire-fighting trainings and drills.
- Use of safety gadgets by the workforce.

CHAPTER 10: STAKEHOLDER CONSULTATION

10.1 General

Public consultation refers to the process by which the concerns of local affected persons and others who have plausible stake in impacts assessment 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 IEE and EIA Review Regulations, 2022 public consultation is mandatory for any socio-environmental study. For this purpose, assessment survey and public consultation sessions held with different stakeholder groups that may be impacted. The consultation process was carried out in accordance with the guidelines laid by EPA, Punjab. The objectives of this process were to:

- Share information with stakeholders on project construction and operation.
- To access the impacts on the physical, biological, and socio-economic environment.
- Understand stakeholder concerns regarding various aspects of the project.
- Understand the perceptions, assessment of social impacts and concerns of the communities of the project area.
- Find out the awareness level and situation of acceptability to identify any issues for the implementation of said project.
- To invite people to express their views about the positive/negative impacts on their life styles and environment.

This report includes all the comments, which were taken into account in preparing the definitive development concept for the construction of the said unit. Public consultation performas and survey pictorials are attached herewith as **Annex-E** and **Annex-I,** respectively**.**

10.2 Consultation Mechanism

Primary stakeholders were consulted during informal and formal meetings. The consultation process was carried out in the Urdu language. During these meetings a simple, non-technical, description of the project was given, with an overview of the project's likely human and environmental impact. This was followed by an open discussion allowing participants to voice their concerns and opinions. In addition to providing communities with information on the proposed project, their feedback was documented during the primary stakeholder consultation. The issues and suggestions raised were recorded in field notes for analysis and interpretation.

By reaching out to a wider segment of the population and using various communication tools such as participatory needs assessment, community consultation meetings, focus group discussions, in-depth interviews, and participatory rural appraisal EIA involved the community in active decision-making.

This process will continue even after this EIA has been submitted, as well as during future EIA in which similar tools will be used to create consensus among stakeholders on specific environmental and social issues.

Secondary stakeholder consultations were more formal as they involved government representatives and local organizations, consulted during face-to-face meetings. They were briefed on the EIA process, the project design, and the potential negative and positive impact of the project on the area's environment and communities. It was important not to raise community expectations unnecessarily or unrealistically during the stakeholder consultation meetings in order to avoid undue conflict with community's leaders or local administrators. The issues recorded in the consultation process were examined, validated, and addressed in the EIA Report.

This section involves communication of possible impacts and concerns with

- ✓ Proponent
- ✓ The responsible authority
- ✓ Other departments and agencies
- ✓ Environmental Practitioners and experts
- ✓ Affected and wider community

10.3 Proponents Environmental Management Team

Consultation regarding M/S Hafizabad LPG (PVT) Ltd. was done with Proponent and supervisor and anticipated impacts were discussed. Concerns of locals, Environmental Practitioners & experts were discussed and asked to consider them while construction of above-said project. Locals will be preferred for employment after providing proper training. Mitigations measures mentioned in EMP will be truly implemented.

10.3.1 Responsible Authority

Overall responsibility for implementation of EMP will be that of project proponent. A supervisor will be appointed to manage the all-safety related hazards, environmental issues and ensure the compliance of PEQS.

10.3.2 Other departments and agencies

Different departments were consulted regarding said project within study area of project area.

10.3.3 Consultation with Government Departments

Various departments 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.

10.3.4 Environmental Practitioners and experts

Consultation with environmental practitioners and experts was noted and their comments and suggestions were observed and mentioned below.

Table 16: Consultation with Environmental Practitioners and Experts

Sr. No	Name	Qualification	Comments/Suggestions
1.	**Fukaiha Falaq**	M.Phil Environmental Engineer	She said that: • Environmentally friendly operation of said facility should be ensured. Moreover, it will help to comply with PEQS. • Sewage water should be disposed of properly.
2.	**Mr. Attiq**	BS Environmental Sciences	Following comments/suggests were noted: • He said that locals should be preferred for employment opportunity. • In case of outsider's residence must be provided within the facility or in its nearby vicinity. • Proper mitigation measures must be adopted during construction and operation of said project.
3.	**Misbah Amanat**	B.S Environmental Engineer	• She said that in case of removal of vegetation trees must be planted after construction at designated green areas. • More water conservation strategies must be adopted. • Solid waste must be collected and disposed off properly by using standard practices of the area.
4.	**Mehreen Riaz**	B.S Environmental Engineer	• Proper leveling and commissioning must be done at the end of civil work. • Environmental manager must be hired to ensure the compliance of PEQS. • By installation of said project the impact due to the disposal of wastewater should be adopted as per standard practices of the area

10.4 Affected and Wider Community

Social survey was conducted to consult with local community. Their concerns were noticed and discussed with proponent and their team. Majority was in favor of project their details are given below in table

Table 17: Concerns Noted during Community Survey

Sr.#	Respondents	CNIC/Contact No.	Concerns
i.	**Sajjad Hussain**	0333-6621136	During the survey in the study area following concerns of the local community were noted: ➢ During construction and operation locals should be preferred for the job opportunities. ➢ Solid waste should not be collected at site, it should be disposed of properly. ➢ Health and safety of the workers should be ensured. ➢ Workers should be hired from local community. ➢ Indigenous trees around the project area should be planted to control air pollution. ➢ During construction phase dust emission should be controlled. ➢ An effective WWTP should be designed and implemented.
ii.	**Muhammad javed**	0344-9173064	
iii.	**M. Ashraf**	0318-6137175	
iv.	**Abdullah**	0302-8130724	
v.	**Nazir**	0300-6537783	
vi.	**Nasir jamil**	0309-6311213	
vii.	**Shahid ali**	0345-1410512	
viii.	**Kashif mehmood**	0303-8000352	

CONCLUSION AND RECOMMENDATIONS

The report presents Environmental Impact Assessment (EIA) for the construction of LPG Storage and Filling Plant under the name of M/S Hafizabad LPG (PVT) Ltd. EIA of Project is performed according to guidelines of EPA. It includes 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. The performed EIA showed all anticipated impacts (both positive and negative), associated with the project. Appropriate mitigation measures as explained in the environmental study shall reduce, if not eliminate, these impacts so that these are within acceptable limits. Moreover, no deterioration, depletion or exploitation of resources is expected to be caused by this project.

Based on overall assessment of the environmental impact of the project, it is concluded that the project is not likely to cause any significant adverse impact on the social, physical and biological environment of the area, provided that suitable mitigation measures as identified in this study are implemented.

It is accordingly recommended that Environmental Approval for the project may be issued by the Punjab Environmental Protection Agency.